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United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
Kentucky Natural
Resources and Environmental
Protection Cabinet and
Kentucky Agricultural
Experiment Station

Soil Survey of Montgomery County, Kentucky

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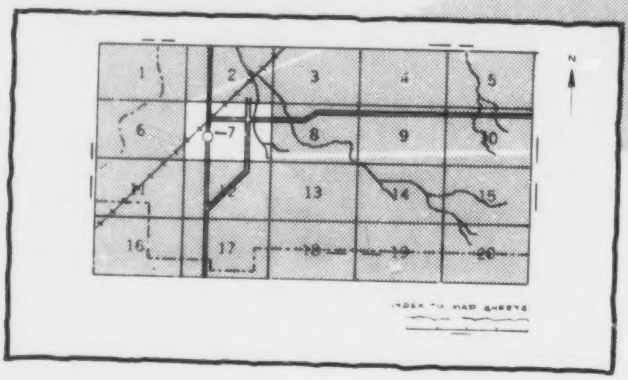
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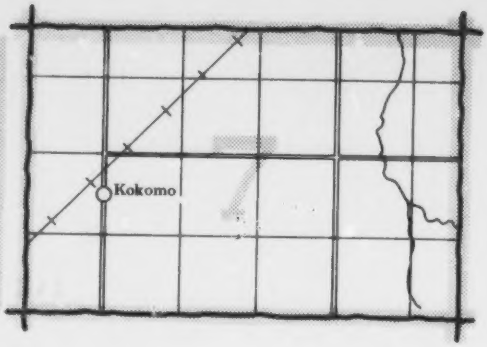

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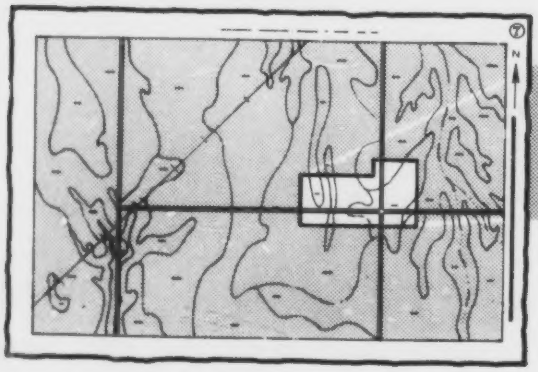

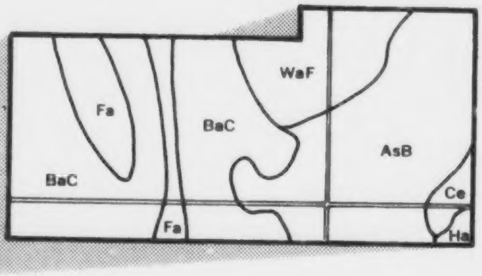
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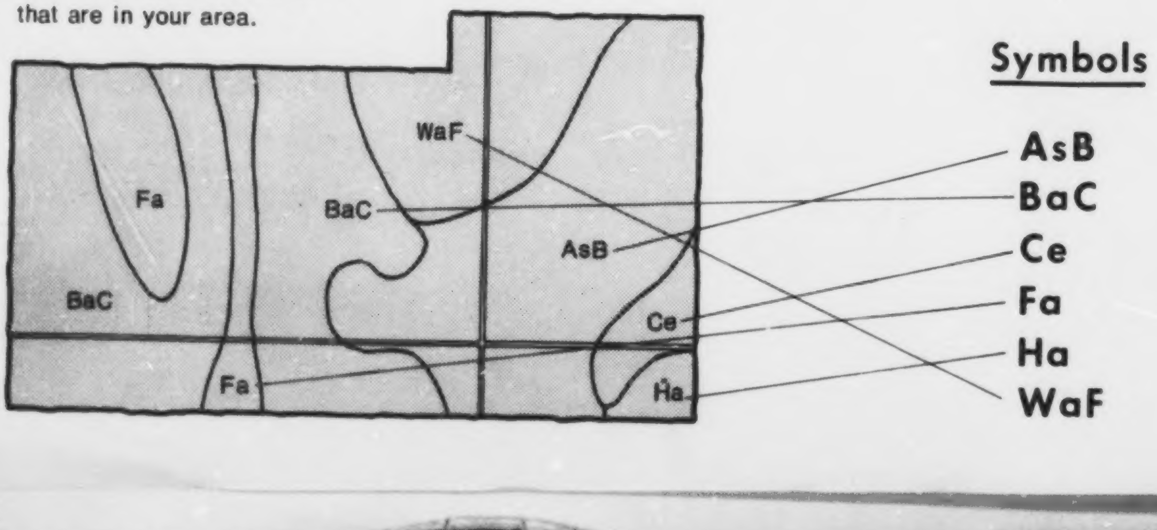
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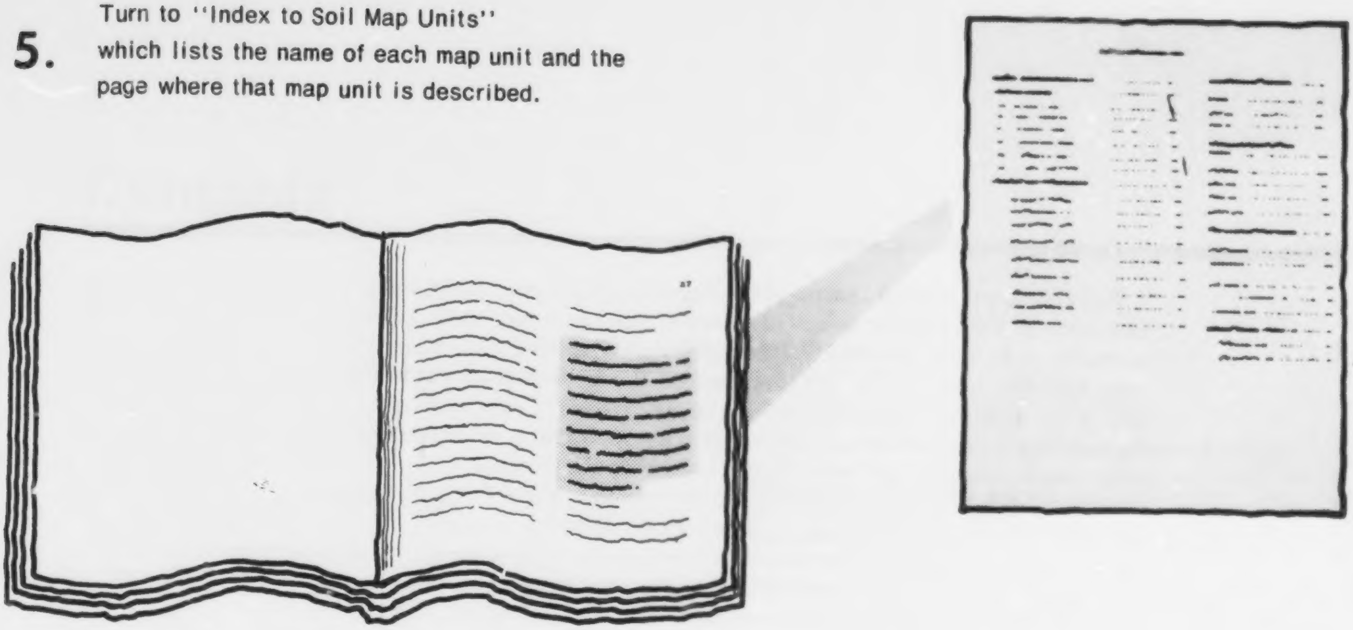
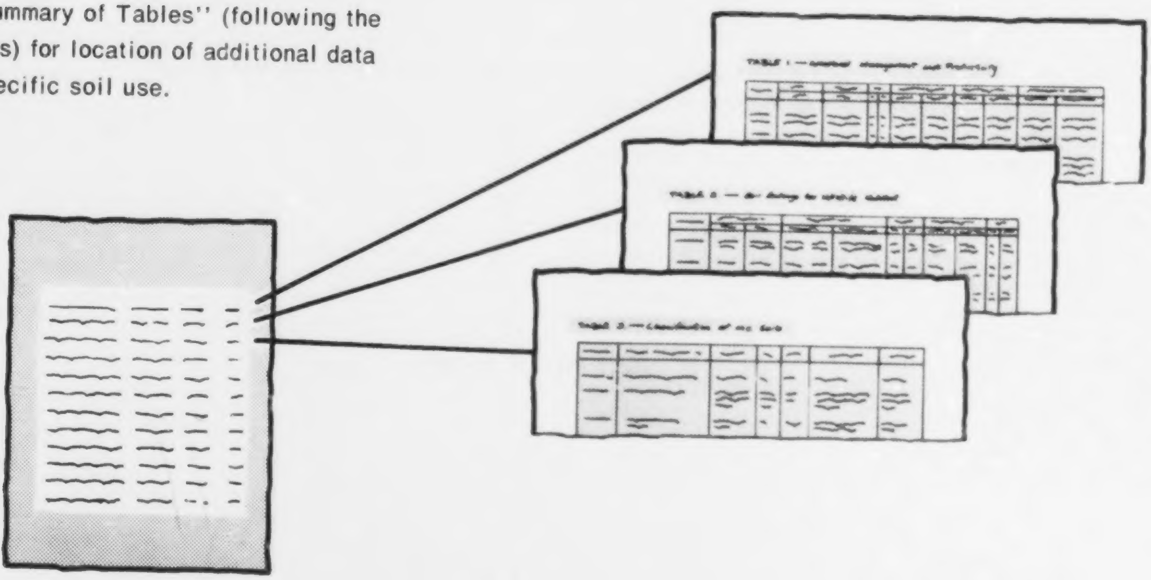
THIS SOIL SURVEY

5. Turn to ''Index to Soil Map Units'' which lists the name of each map unit and the page where that map unit is described.



6. See ''Summary of Tables'' (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in 1978-1982. Soil names and descriptions were approved in 1983. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This soil survey was made cooperatively by the Soil Conservation Service, the Kentucky Natural Resources and Environment Protection Cabinet, and the Kentucky Agricultural Experiment Station. It is part of the technical assistance furnished to the Montgomery County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: An area of the Outer Bluegrass physiographic region. Lowell and Faywood soils are predominant on the steeper side slopes.

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Foreword

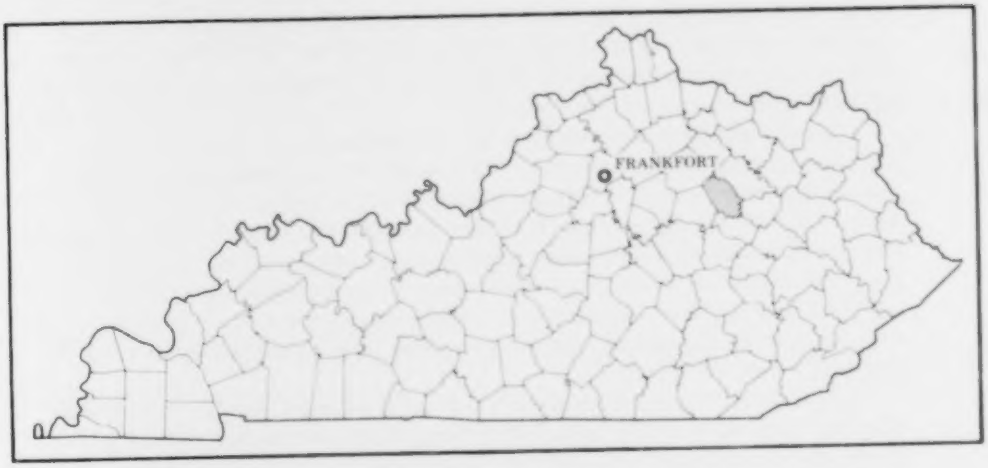
This soil survey contains information that can be used in land-planning programs in Montgomery County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Randall W. Giessler
State Conservationist
Soil Conservation Service



Location of Montgomery County in Kentucky.

Soil Survey of Montgomery County, Kentucky

By Ronnie B. Froedge, Soil Conservation Service

Fieldwork by Rudy Forsythe, John Kelley, Darwin Newton, Hubert Odor,
A. Richardson, and Ronnie B. Froedge, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with
Kentucky Natural Resources and Environmental Protection Cabinet and
Kentucky Agricultural Experiment Station

MONTGOMERY COUNTY is in the east-central part of Kentucky. In 1980, the population of the county was 20,072. Mount Sterling, the county seat, has a population of 5,809 *(7)*. The county has a total area of 130,560 acres, or 204 square miles.

The southern part of the county is rugged, steep, wooded, and sparsely populated. The rest of the county is dominantly rolling to hilly pastureland with some broad ridges and flats that are often cultivated. The less sloping areas are more densely populated.

There are 4 main watershed systems in the county. The Grassy Lick Creek and Hinkston Creek watersheds drain the northern, northwestern, and west-central parts of the county. They flow primarily north and drain about a third of the county. The Lulbegrud Creek watershed flows primarily southwest and drains the west-central and southwest parts of the county. About an eighth of the survey area is in this watershed. The rest of the county drains into the Slate Creek watershed, which is the largest watershed system in the county. It flows primarily northeast and drains slightly over half of the county.

Elevation of the land ranges from 810 feet on the Hinkston Creek flood plains in the northern tip of the county to 1,447 feet on top of Westbrook Mountain in the southern part of the county.

General Nature of the County

This section gives general information about Montgomery County. It briefly discusses climate; history and settlement; farming; and geology, physiography, and relief.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Mount Sterling in the period 1951 to 1979. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 36 degrees F, and the average daily minimum temperature is 26 degrees. The lowest temperature on record, which occurred at Mount Sterling on January 24, 1963, is -20 degrees. In summer the average temperature is 74 degrees, and the average daily maximum temperature is 85 degrees. The highest recorded temperature, which occurred on July 14, 1954, is 106 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 47 inches. Of this, 25 inches, or 53 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 15 inches. The heaviest

1-day rainfall during the period of record was 6 inches at Mount Sterling on December 8, 1978. Thunderstorms occur on about 50 days each year, and most occur in summer.

The average seasonal snowfall is 18 inches. The greatest snow depth at any one time during the period of record was 22 inches. On an average of 12 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 65 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 12 miles per hour, early in spring.

History and Settlement

Montgomery County was established in 1796. The county was named after General Richard Montgomery, a general in the American Revolutionary Army. Since the establishment of Montgomery County, much of the original territory has been subdivided to form 18 additional counties in Kentucky *(3)*.

In December 1792, the Kentucky Assembly passed an act establishing the town of Mount Sterling on 640 acres *(6)*. The town was originally called "Little Mountain Town."

Farming

Farming is a major economic activity in Montgomery County. In 1978 there were 883 farms in Montgomery County. The average farm was 138 acres. In the county, 93.5 percent of the land, or 122,105 acres, was in farmland *(4)*.

The farming in Montgomery County is diversified with beef cattle (fig. 1), dairy, hay, sheep, hogs, horses, poultry, tobacco, vegetable crops, and grain. Hay, corn, tobacco, and soybeans are the major crops. The major crops in Montgomery County in 1978 were 30,588 acres of hay (all kinds except alfalfa), 1,586 acres of alfalfa hay, 3,607 acres of corn used for grain, 1,687 acres of corn used for silage, 2,743 acres of tobacco, and 495 acres of soybeans *(12)*.

Geology, Physiography, and Relief

The soils in the survey area are underlain by sedimentary rocks of the Ordovician, Silurian, Devonian, Mississippian, and Pennsylvanian ages (see table 4).

In Montgomery County, there are many soils that formed from these parent rock materials. Lowell, Faywood, Aaron, and Cynthiana soils formed from Ordovician rocks; Shrouts, Beasley, and Brassfield soils formed mostly from Silurian and Ordovician rocks; Colyer and Trappist soils formed from Devonian and Mississippian rocks; Lenberg, Berks, and Caneyville soils formed from Mississippian rocks; and Latham soils formed from Pennsylvanian rocks.

A physiographic region is a geographic area that has distinctive landscape and topographic patterns that can be described and outlined on a map. Four main physiographic regions occur in Montgomery County: Hills of the Bluegrass; Outer Bluegrass; Knobs; and Mountain and Eastern Coal Fields.

The Hills of the Bluegrass physiographic region consists of smooth, steep, upland hillsides and narrow, winding, rolling to hilly ridges that are dissected with a dendritic drainage pattern and narrow flood plains.

The Outer Bluegrass physiographic region consists of long, winding, broad and narrow, undulating to rolling, upland ridges and short, hilly side slopes (fig. 2).

The Knobs physiographic region consists of long, steep and very steep, upland hillsides and narrow and very narrow, rolling to hilly ridges that are highly dissected with a dendritic drainage pattern. Some areas have broad upland ridges mixed in with the steeper topography.

The Mountain and Eastern Coal Field physiographic region is mountainous. Areas are deeply dissected and characterized by very steep to moderately steep, benched side slopes; steep and very steep, smooth residual side slopes; sandstone and limestone rock outcrops and escarpments; very narrow ridges; and narrow flood plains. Some ridges are as high as 450 feet above valley floors.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables

igure 1.—Beef cattle grazing on an area of Brassfield-Shrouts-Beasley complex, 12 to 30 percent slopes. This is in the Hills of the Bluegrass physiographic region.

he soil scientist to predict with considerable accuracy he kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge nto one another as their characteristics gradually hange. To construct an accurate soil map, however, soil cientists must determine the boundaries between the oils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of

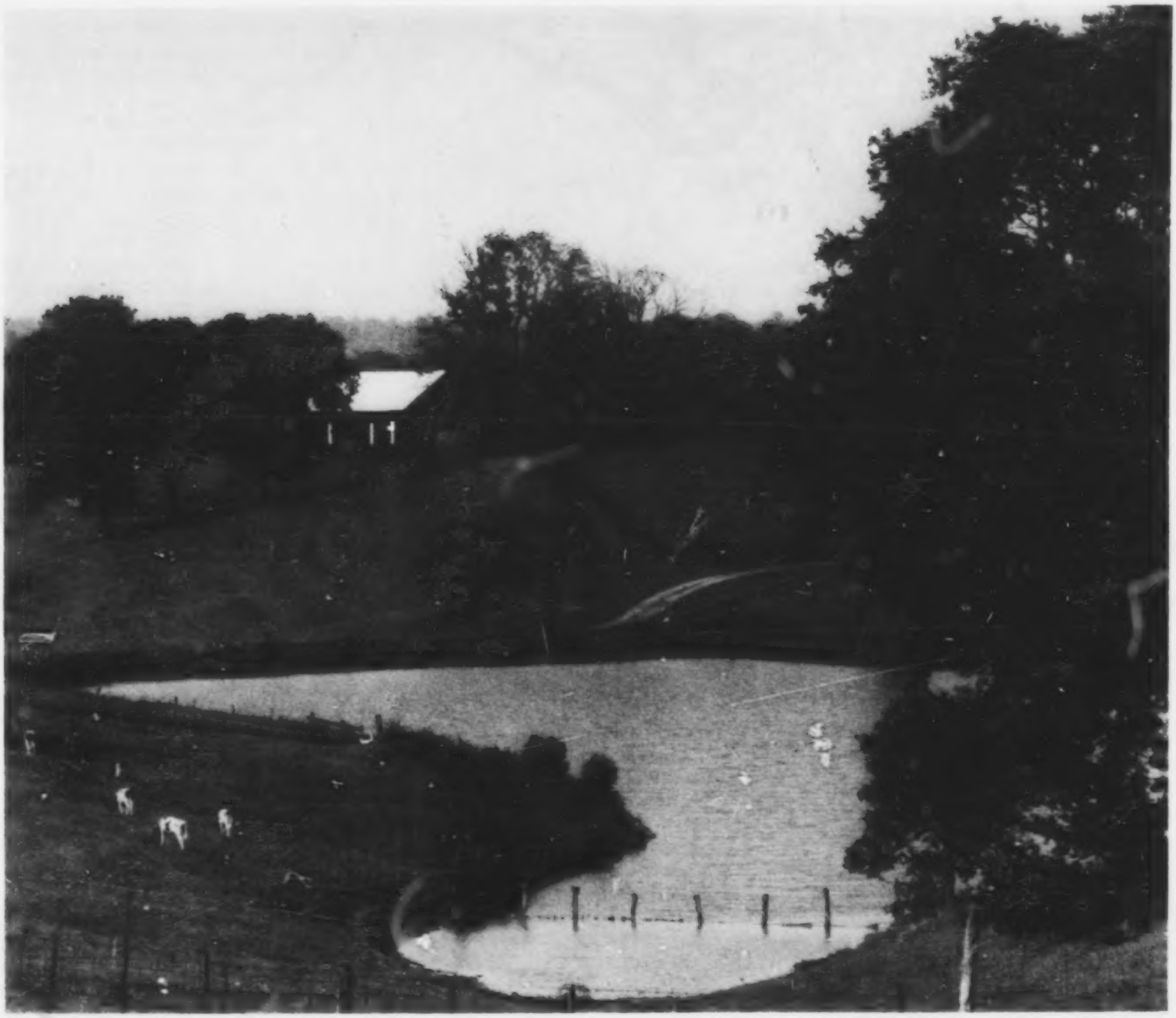


Figure 2.—A typical scene in an area of the Outer Bluegrass physiographic area. The barn is in an area of Shelbyville and Lowell soils. The cattle are grazing on an area of Lowell and Faywood soils.

rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed, and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Each map unit is rated for *cultivated crops*, *woodland*, *urban uses*, and *recreation areas*. Cultivated crops are those grown extensively in the survey area. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreation areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreation areas are those used for nature study and as wilderness.

1. Faywood-Lowell-Cynthiana

Moderately deep, deep, and shallow, gently sloping to steep, well drained soils that have a clayey subsoil; on hillsides and narrow ridges

The landscape is steep hillsides, narrow winding ridges, and narrow flood plains. The soils are underlain by calcareous bedrock from the Ordovician period.

The soils in this map unit are used for hay or permanent pasture. A few areas are used for burley tobacco and corn, and there are a few small scattered tracts of deciduous woodlands.

The drainage pattern is dendritic. A few creeks or perennial streams and many intermittent streams are in this map unit. The ponds are embankment and hillside type.

Except for a few small communities, this map unit consists of scattered farmsteads. The important structures in this map unit are roads, gas transmission lines, and farm buildings.

This map unit makes up about 41 percent of Montgomery County. It is about 42 percent Faywood soils, 26 percent Lowell soils, 11 percent Cynthiana soils, and 21 percent soils of minor extent.

Faywood soils are moderately deep, well drained, strongly sloping to steep soils on hillsides and narrow ridges. They have a silt loam surface layer and a silty clay or clay subsoil.

Lowell soils are deep, well drained, gently sloping to steep soils on hillsides and narrow ridges. They have a silt loam surface layer and a clay or silty clay subsoil.

Cynthiana soils are shallow, well drained, moderately steep to steep soils on hillsides. They have a silty clay loam surface layer and a subsoil that is clay and flaggy clay.

Of minor extent in this map unit are Aaron, Crider, Shelbyville, and Nicholson soils on ridges and upper side slopes; Boonesboro, Huntington, and Melvin soils on flood plains; Elk and Otwell soils on stream terraces; Wooper soils on colluvial toe slopes; and Robertsville soils on stream terraces and broad upland ridges.

The soils in this map unit are suited to pasture, hay, and woodland. They are poorly suited to cultivated crops. The erosion hazard and steepness of slope are the main limitations.

These soils are poorly suited to most urban uses. Moderately slow permeability, depth to bedrock, the clayey subsoil, low strength, and steepness of slopes are the main limitations.

2. Lowell-Crider-Shelbyville

Deep, gently sloping to moderately steep, well drained soils that have a clayey and loamy subsoil; on ridges and hillsides

The landscape is long, winding ridges and short side slopes. These soils are underlain by calcareous bedrock from the Ordovician period (fig. 3).

The soils in this map unit are used mainly for hay, pasture, and row crops. A few creeks or perennial streams and many intermittent streams are in this map unit. The ponds are mostly embankment type.

Mount Sterling, the only large town in the county, is in this map unit. A few other small communities exist, but this map unit consists mostly of scattered farmsteads. Towns, roads, railroads, and gas transmission lines are the important structures in this map unit.

This map unit makes up about 15 percent of Montgomery County. It is about 30 percent Lowell soils, 26 percent Crider soils, 21 percent Shelbyville soils, and 23 percent soils of minor extent.

Lowell soils are deep, well drained, gently sloping to moderately steep soils on convex ridges and hillsides. They have a silt loam surface layer and a subsoil that is mostly clay.

Crider soils are deep, well drained, gently sloping to strongly sloping soils on convex ridges, hillsides, and high stream terraces. They have a silt loam surface layer and a subsoil that is silt loam and silty clay loam.

Shelbyville soils are deep, well drained, gently sloping to strongly sloping soils on convex ridges and the upper part of hillsides. They have a silt loam surface layer. The upper part of the subsoil is silty clay loam, and the lower part is silty clay or clay.

Of minor extent in this map unit are Aaron, Faywood, and Nicholson soils on ridges and upper side slopes; Elk and Otwell soils on stream terraces; Huntington and Melvin soils on flood plains; and Robertsville soils on stream terraces and broad upland ridges.

The soils in this map unit are well suited to pasture, hay, and woodland. The soils are suited to cultivated crops, but cultivated areas are limited because of the erosion hazard.

The soils in this map unit are suited to urban uses. Steepness of slopes, low strength, depth to bedrock, moderately slow permeability, and the clayey subsoil are the main limitations.

3. Beasley-Brassfield-Shrouts

Deep and moderately deep, gently sloping to steep, well drained soils that have a clayey or loamy subsoil; on hillsides and narrow ridges

The landscape is steep hillsides and narrow winding ridges. The soils are underlain by calcareous bedrock from the Silurian, Devonian, and upper Ordovician periods.

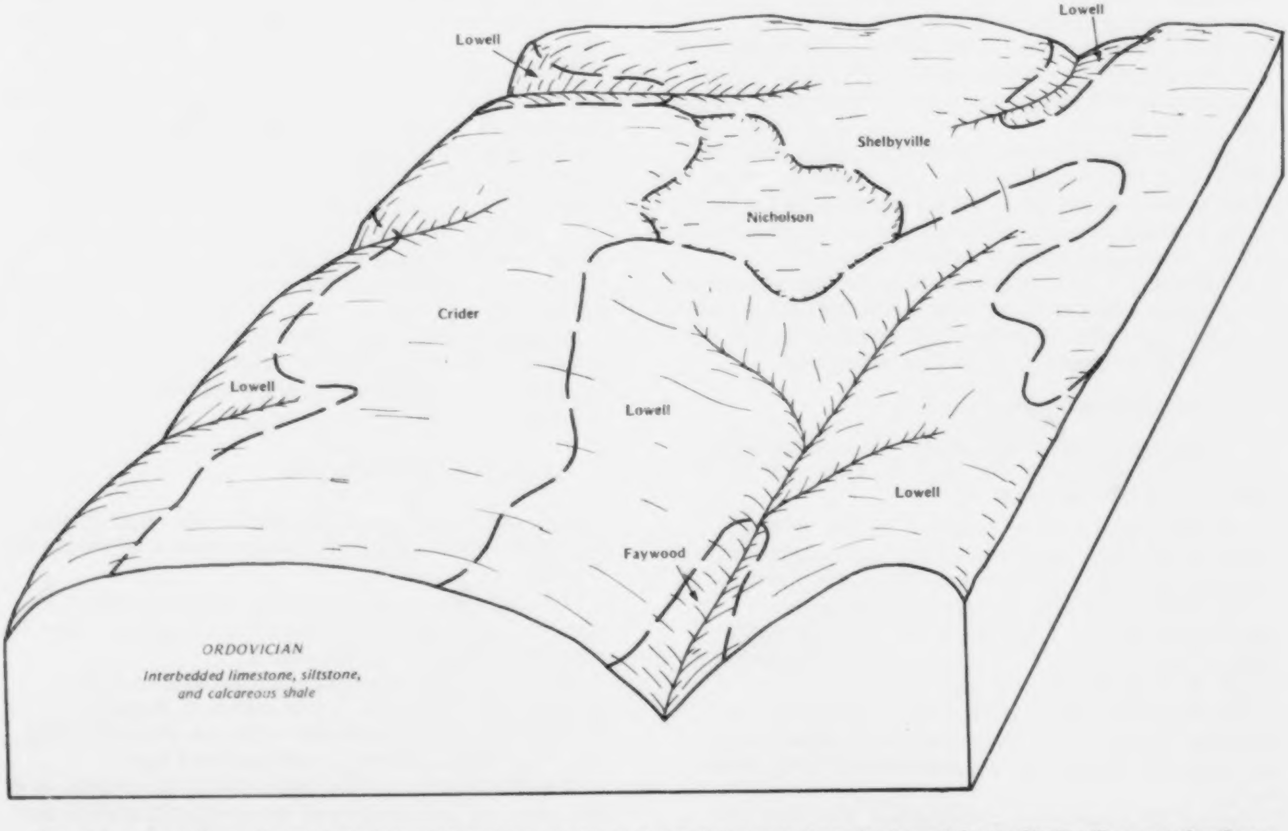


Figure 3.—The pattern of soils and relationship to topography and underlying material in the Lowell-Crider-Shelbyville general soil map unit.

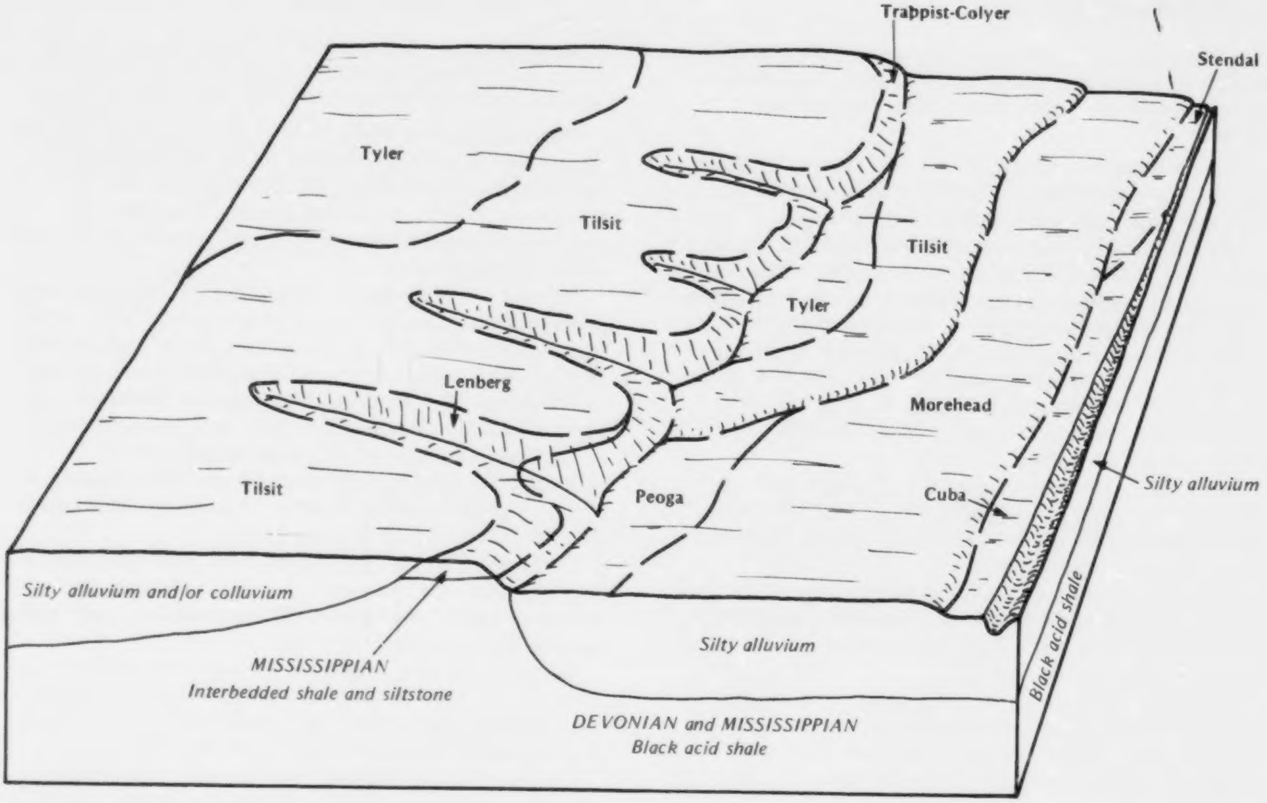

Trappist-Colyer
Stendal
Tyler
Tilsit
Tilsit
Tyler
Lenberg
Morehead
Tilsit
Peoga
Cuba
Silty alluvium
Silty alluvium and/or colluvium
MISSISSIPPIAN
Interbedded shale and siltstone
Silty alluvium
Black acid shale
DEVONIAN and MISSISSIPPIAN
Black acid shale

Figure 4.—The pattern of soils and relationship to topography and underlying material in the Tilsit-Morehead-Tyler general soil map unit.

The soils in this map unit are used mainly for permanent pasture and hay. A few areas are used for burley tobacco, corn, and woodland. A few perennial streams and many intermittent streams are in this map unit. The ponds are mostly embankment or hillside type. Most of the development in this map unit is scattered farmsteads. The important structures in this map unit are roads, gas transmission lines, and farm buildings.

This map unit makes up about 13 percent of Montgomery County. It is about 27 percent Beasley soils, 24 percent Brassfield soils, 18 percent Shrouts soils, and 31 percent soils of minor extent.

Beasley soils are deep, well drained, gently sloping to steep soils on narrow convex ridges and hillsides. They have a silt loam surface layer and a subsoil that is silty clay.

Brassfield soils are moderately deep, well drained, strongly sloping to steep soils on hillsides and very narrow ridges. They have a silty clay loam surface layer and a subsoil that is silty clay.

Shrouts soils are moderately deep, well drained, moderately steep or steep soils on hillsides. They have a silty clay loam surface layer and a subsoil that is silty clay.

Of minor extent in this map unit are Crider and Nicholson soils on ridges and short side slopes; Otwell, Elk, Morehead, and Sees soils on stream terraces; Robertsville, Tilsit, and Tyler soils on stream terraces and upland ridges; Huntington, Boonesboro, and Melvin soils on flood plains; and Faywood and Cynthiana soils on hillsides.

The soils in this map unit are suited to woodland, permanent pasture, and hay. They are poorly suited to cultivated crops, but some areas are used for burley tobacco and corn. The erosion hazard, difficulty using equipment because of the steepness of slopes, and poor tilth are the main limitations to use for cultivated crops.

The soils in this map unit are poorly suited to most urban uses. Moderately slow and slow permeability, depth to bedrock, the clayey subsoil, steepness of slopes, and low strength are the main limitations.

4. Tilsit-Morehead-Tyler

Deep, nearly level to strongly sloping, moderately well drained to somewhat poorly drained soils that have a loamy subsoil; on ridges, side slopes, and stream terraces

The landscape is upland ridges and stream terraces (fig. 4). The soils are underlain by acid shale bedrock from the Devonian and Mississippian periods.

The soils in this map unit are used mainly for pasture, hay, and row crops. There are small scattered tracts of deciduous woodlands in the wetter areas. A few creeks or perennial streams and many intermittent streams are in this map unit. The ponds are mostly dug or pit type. Except for a few small communities, most of this map unit consists of scattered farmsteads. The important structures in this map unit are roads, gas transmission lines, and farm buildings.

This map unit makes up about 12 percent of Montgomery County. It is about 41 percent Tilsit soils, 18 percent Morehead soils, 14 percent Tyler soils, and 27 percent soils of minor extent.

Tilsit soils are deep, moderately well drained, nearly level to strongly sloping soils on ridges and short side slopes. They have a silt loam surface layer and a subsoil that is mostly silty clay loam.

Morehead soils are deep, moderately well drained to somewhat poorly drained, nearly level to gently sloping soils on low stream terraces. They have a silt loam surface layer and a subsoil that is silt loam and silty clay loam.

Tyler soils are deep, somewhat poorly drained, nearly level to gently sloping soils on broad ridges and stream terraces. They have a silt loam surface layer and subsoil. The soils have a fragipan at a depth of about two feet.

Of minor extent in this map unit are Peoga, Sees, and Otwell soils on stream terraces; Cuba and Stendal soils on flood plains; Beasley and Crider soils on ridges and short side slopes; Trappist and Lenberg soils on narrow ridges and hillsides; Colyer and Shrouts soils on hillsides; Shelocta soils on colluvial toe slopes and hillsides; and Robertsville soils on stream terraces and broad upland ridges.

The soils in this map unit are well suited to pasture and hay if wetness-tolerant plants are used. Most soils in this map unit are well suited to cultivated crops if adequately drained. Wetness is the main limitation.

The soils in this map unit are suited to woodland. The production potential is moderately high to high. Limited use of equipment because of wetness, seedling mortality, and plant competition are the main management concerns.

The soils in this map unit are poorly suited to most urban uses. Depth to bedrock, moderately slow and slow permeability, low strength, a seasonal high water table, and rare flooding are the main limitations.

5. Lenberg-Trappist-Colyer

Moderately deep and shallow, strongly sloping to very steep, well drained soils that have a clayey subsoil; on hillsides, toe slopes, and narrow to very narrow ridges

The landscape is steep to very steep conical hills and narrow winding ridges that are highly dissected with a dendritic drainage pattern (fig. 5). This map unit is commonly referred to as the 'knobs.' The soils are underlain by acid shale bedrock from the Devonian and Mississippian period.

The soils in this map unit are used for woodland and permanent pasture. Some areas are in hay. Most of the streams are intermittent. The ponds are embankment or pit type. The area is sparsely populated, except along major roads. The important structures in this map unit are ponds, gas transmission lines, and farm buildings.

This map unit makes up about 12 percent of Montgomery County. It is about 38 percent Lenberg soils, 17 percent Trappist soils, 17 percent Colyer soils, and 28 percent soils of minor extent.

Lenberg soils are moderately deep, well drained, strongly sloping to very steep soils on hillsides and narrow ridges. They have a silt loam surface layer and a subsoil that is mostly silty clay.

Trappist soils are moderately deep, well drained, very steep to strongly sloping soils on hillsides, toe slopes, and narrow ridges. They have a silt loam surface layer and a subsoil that is silty clay loam and silty clay.

Colyer soils are shallow, well drained, moderately steep to very steep soils on hillsides and very narrow ridges. They have a silt loam surface layer and a subsoil that is very shaly silty clay.

Of minor extent in this map unit are Shelocta soils on colluvial toe slopes and hillsides; Morehead and Peoga soils on stream terraces; and Tyler and Tilsit soils on stream terraces and broad upland ridges.

The soils in this map unit are not suited to cultivated crops. They are poorly suited to pasture, hay, and urban uses. The erosion hazard and difficulty using equipment because of the steepness of slopes are the main limitations.

Most of the soils in this map unit are suited to woodland. The main concerns in management are limited use of equipment because of steepness of slopes, the erosion hazard, seedling mortality, and plant competition.

The soils in this map unit are poorly suited to urban uses. Depth to bedrock and steepness of slopes are the main limitations.

6. Shelocta-Berks-Bledsoe

Deep and moderately deep, moderately steep to very steep, well drained soils that have a loamy and clayey subsoil; on side slopes, toe slopes, and benches

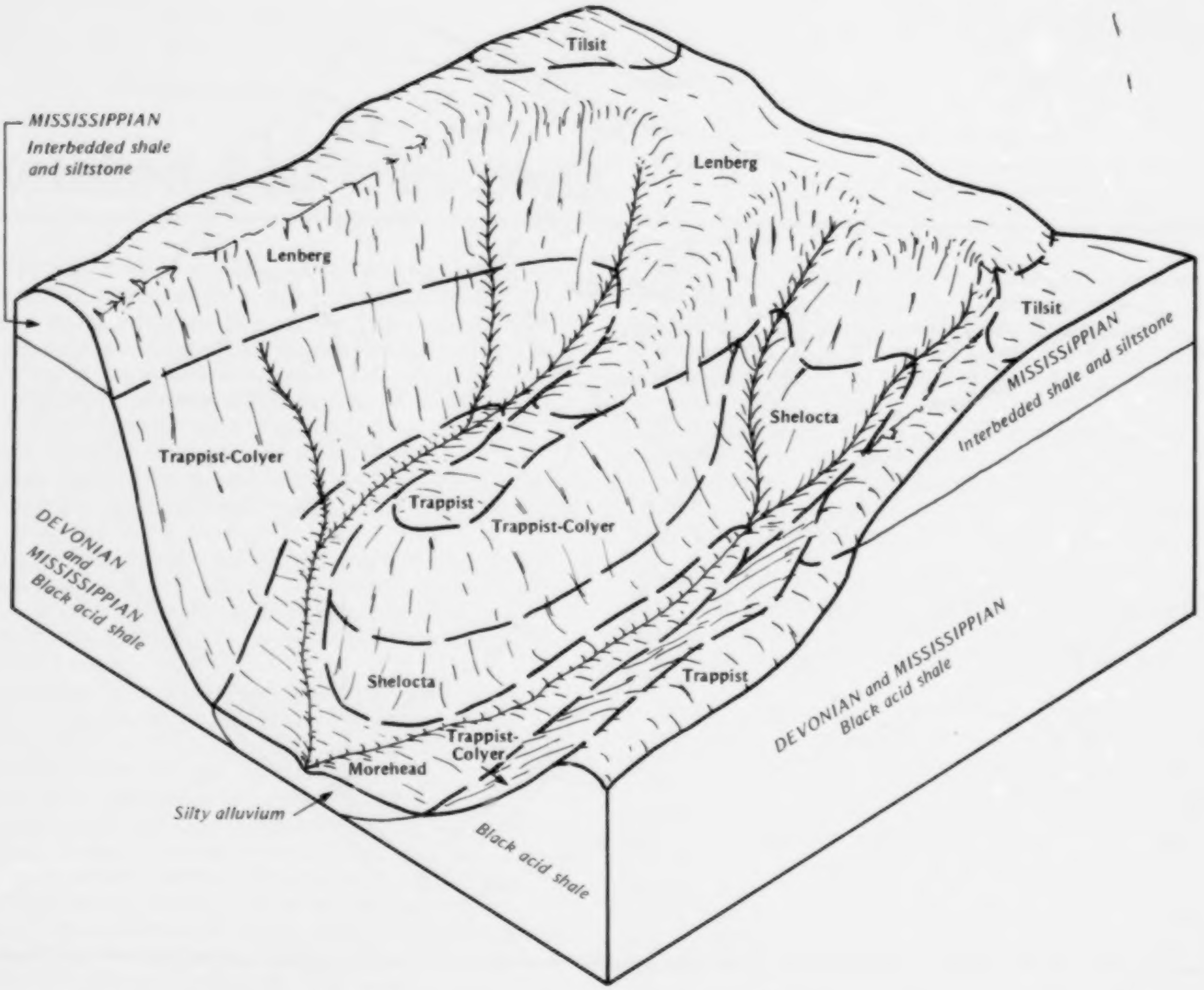

Tilsit
MISSISSIPPIAN
Interbedded shale and siltstone
Lenberg
Lenberg
Tilsit
MISSISSIPPIAN
Interbedded shale and siltstone
Shelocta
Trappist-Colyer
Trappist
Trappist-Colyer
DEVONIAN and MISSISSIPPIAN
Black acid shale
Shelocta
Trappist
DEVONIAN and MISSISSIPPIAN
Black acid shale
Trappist-Colyer
Morehead
Silty alluvium
Black acid shale

Figure 5.—The pattern of soils and relationship to topography and underlying material in the Lenberg-Trappist-Colyer general soil map unit.

The landscape is mountainous. It is very steep to steep benched side slopes; steep and very steep smooth side slopes; sandstone and limestone rock outcrops; and very narrow ridges (fig. 6). The soils are underlain by bedrock from the Mississippian and Pennsylvanian periods.

Most of the soils in this map unit are in hardwood forests. There are a few small areas of pine. The drainage pattern is dendritic. Many intermittent streams are in this map unit. The ponds are hillside or embankment type. Except for the farmsteads along the roads, this map unit is sparsely settled. The soils are poorly suited for urban development because of the steepness of slopes. The important structures in this map unit are roads, rock quarry, and farm buildings.

This map unit makes up about 7 percent of Montgomery County. It is about 54 percent Shelocta soils, 10 percent Berks soils, 7 percent Bledsoe soils, and 29 percent soils of minor extent.

Shelocta soils are deep, well drained, strongly sloping to very steep soils on benches, side slopes, and toe slopes. They have a silt loam surface layer and a subsoil that is silt loam and channery silty clay loam.

Berks soils are moderately deep, well drained, steep to very steep soils on side slopes. They have a channery silt loam surface layer and a subsoil that is very channery and channery silt loam.

Bledsoe soils are deep, well drained, moderately steep to very steep soils on benched side slopes and toe

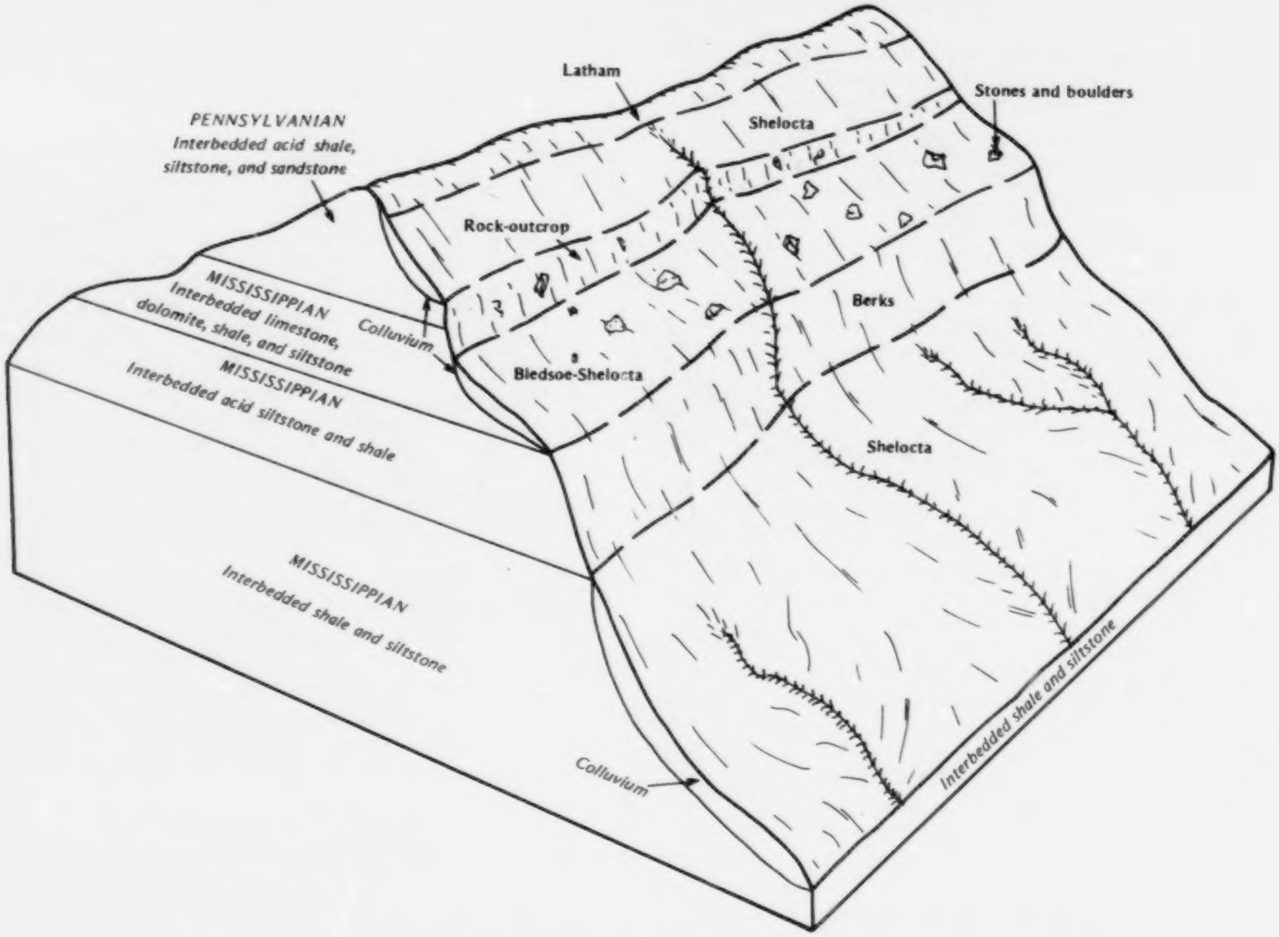

Latham
Stones and boulders
PENNSYLVANIAN
Interbedded acid shale, siltstone, and sandstone
Shelocta
Rock-outcrop
MISSISSIPPIAN
Interbedded limestone, dolomite, shale, and siltstone
Colluvium
Berks
Bledsoe-Shelocta
MISSISSIPPIAN
Interbedded acid siltstone and shale
Shelocta
MISSISSIPPIAN
Interbedded shale and siltstone
Colluvium
Interbedded shale and siltstone

Figure 6.—The pattern of soils and relationship to topography and underlying material in the Shelocta-Berks-Bledsoe general soil map unit.

slopes. They have a silt loam surface layer and a subsoil that is silty clay.

Of minor extent in this map unit are Lenberg, Latham, and Caneyville soils on narrow ridges and hillsides; Cuba soils on flood plains; and Morehead soils on stream terraces.

Most of the soils in this map unit are not suited to cultivated crops, hay, and urban uses. In some areas they are poorly suited to pasture. The erosion hazard, difficulty using equipment because of steepness of slopes, rock outcrops, unstable slopes, and proximity to rock ledges and short cliffs are the main limitations.

Most soils in this map unit are suited to woodland. The main concerns in management are difficulty using equipment because of steepness of slopes, the erosion hazard, seedling mortality, and plant competition.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Lowell silt loam, 2 to 6 percent slopes, is one of several phases in the Lowell series.

Some map units are made up of two or more major soils. These map units are called soil complexes. A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Colyer-Trappist complex is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits-Dumps complex is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 5 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

AaB—Aaron silt loam, 2 to 6 percent slopes. This gently sloping, clayey soil is deep and moderately well drained. It is on narrow upland ridges. Slopes are smooth and convex. The mapped areas are 5 to 30 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of 17 inches, is light olive brown clay, and the lower part, to a depth of 45 inches, is light olive brown silty clay or clay mottled in shades of gray and brown. The substratum is light olive brown and light olive gray silty clay to a depth of 53 inches. Limestone bedrock is at a depth of 53 inches.

The Aaron soil is medium in natural fertility and low in organic matter content. This soil is strongly acid to mildly alkaline in the surface layer and the upper part of the subsoil. It is medium acid to mildly alkaline in the lower part of the subsoil and in the substratum. The available water capacity is high, permeability is slow, and surface runoff is medium. A seasonal high water table is at a depth of 18 to 36 inches. The plow layer is easy to till except in small eroded spots. The root zone is deep. This soil has moderate shrink-swell potential.

Included with this soil in mapping are small areas of Faywood, Lowell, Shelbyville, and Nicholson soils.

This Aaron soil is used mainly for hay, pasture, and burley tobacco.

This soil is well suited to cultivated crops such as corn, soybeans, tobacco, and small grains. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil has moderately high potential productivity for woodland. Preferred species for planting are northern red oak, white oak, and white ash. The main concerns in management are plant competition and limited use of equipment because of the clayey subsoil.

This soil is poorly suited to most urban uses. Slow permeability, the seasonal high water table, the clayey subsoil, and depth to bedrock, are limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 3c.

AaC—Aaron silt loam, 6 to 12 percent slopes. This sloping, clayey soil is deep and moderately well drained. It is on narrow upland ridges. Slopes are short, smooth, and convex. The mapped areas are 5 to 50 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of 17 inches, is light olive brown clay. The lower part, to a depth of 45 inches, is light olive brown silty clay or clay mottled in shades of gray and brown. The substratum is light olive brown and light olive gray silty clay to a depth of 53 inches. Limestone bedrock is at a depth of 53 inches.

This Aaron soil is medium in natural fertility and low in organic matter content. This soil is strongly acid to mildly alkaline in the surface layer and the upper part of the subsoil. It is medium acid to mildly alkaline in the lower part of the subsoil and in the substratum. The available water capacity is high, permeability is slow, and surface runoff is medium to rapid. A seasonal high water table is at a depth of 18 to 36 inches. The plow layer is easy to till except in small eroded spots. The root zone is deep. This soil has moderate shrink-swell potential.

Included with this soil in mapping are small areas of Faywood and Lowell soils. Also included are small areas of soils that have slopes of less than 6 percent, and soils that have slopes of more than 12 percent.

This Aaron soil is used mainly for hay and pasture, but some areas are used for burley tobacco and corn.

This soil is suited only to occasional cultivation. The erosion hazard is severe, and erosion control practices are needed if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to control erosion and reduce runoff.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil has moderately high potential for woodland. Preferred species for planting are white oak, northern red oak, and white ash. The main concerns in management are plant competition and limited use of equipment, because of the clayey subsoil.

This soil is poorly suited to most urban uses. Slow permeability, the seasonal high water table, the clayey subsoil, depth to bedrock, and steepness of slope are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 3c.

BaB—Beasley silt loam, 2 to 6 percent slopes. This gently sloping, clayey soil is deep and well drained. It is on narrow upland ridges. Slopes are smooth and convex. The mapped areas are 5 to 20 acres.

Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The subsoil is silty clay. It is strong brown to a depth of 30 inches and brownish yellow with light brownish gray mottles to a depth of 36 inches. The substratum is olive yellow silty clay that has greenish gray mottles. Soft calcareous shale, interbedded with dolomitic siltstone and sandstone, is at a depth of 52 inches.

This Beasley soil is medium in natural fertility and low in organic matter content. This soil is neutral to very strongly acid in the surface layer and the upper part of the subsoil. It is medium acid to moderately alkaline in the lower part of the subsoil, and neutral to moderately alkaline in the substratum. The available water capacity is high, permeability is moderately slow, and surface runoff is medium. The plow layer is easy to till except in small eroded spots. The root zone is moderately deep. This soil has moderate shrink-swell potential.

Included with this soil in mapping are small areas of soils that have a silty clay loam surface layer, and areas that are less than 40 inches deep to bedrock. Also included are areas of soils that are underlain by hard bedrock and small areas that are moderately well drained.

This Beasley soil is used mainly for hay, pasture, corn, and burley tobacco.

This soil is well suited to cultivated crops, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, minimum tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

Potential productivity for woodland is moderately high. This soil is suited to white oak, Virginia pine, eastern redcedar, and white ash. The main concerns in management are plant competition and limited use of equipment because of the clayey subsoil.

This soil is suited to most urban uses. It has severe limitations for septic tank absorption fields, trench sanitary landfill, and local roads and streets. Moderately slow permeability and the clayey subsoil are limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 3c.

BaC—Beasley silt loam, 6 to 12 percent slopes. This sloping, clayey soil is deep and well drained. It is on narrow upland ridges. Slopes are short, smooth, and convex. The mapped areas are 5 to 50 acres.

Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The subsoil is silty clay. It is strong brown to a depth of 30 inches and brownish yellow with light brownish gray mottles to a depth of 36 inches. The substratum is olive yellow silty clay that has greenish gray mottles. Soft calcareous shale, interbedded with dolomitic siltstone and sandstone, is at a depth of 52 inches.

This Beasley soil is medium in natural fertility and low in organic matter content. This soil is neutral to very strongly acid in the surface layer and the upper part of the subsoil. It is medium acid to moderately alkaline in the lower part of the subsoil and neutral to moderately alkaline in the substratum. The available water capacity is high, permeability is moderately slow, and surface runoff is medium to rapid. The plow layer is easy to till except in small eroded spots. The root zone is moderately deep. This soil has moderate shrink-swell potential.

Included with this soil in mapping are small areas of soils that have a silty clay loam surface layer, areas less than 40 inches deep to bedrock, and small areas that are moderately well drained. Also included are areas of soils that are underlain by hard bedrock and small areas of Brassfield and Shrouts soils.

This Beasley soil is used mainly for hay and pasture. Some areas are used for burley tobacco and corn.

This soil is suited only to occasional cultivation. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is suited to woodland, and potential productivity is moderately high. White oak, Virginia pine, eastern redcedar, and white ash are the preferred species for planting. The main concerns in management are plant competition and limited use of equipment because of the clayey subsoil.

This soil is suited to urban uses. It has severe limitations for septic tank absorption fields, sewage lagoon areas, trench sanitary landfill, small commercial buildings, and local roads and streets. Moderately slow permeability, steepness of slope, and the clayey subsoil, are limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 3c.

BcF—Bledsoe-Rock outcrop-Caneyville complex, 6 to 60 percent slopes. This map unit consists of deep and moderately deep, well drained soils and Rock outcrop. These soils are in a regular pattern but cannot be separated at the scale selected for mapping. Bledsoe soil is steep and on long colluvial side slopes below and adjacent to Rock outcrop. Typical areas of Rock outcrop form nearly continuous ledges and short steep cliffs between Bledsoe and Caneyville soils. Caneyville soil is sloping to moderately steep and on very narrow ridges above and adjacent to Rock outcrop. There are 1 to 10 percent bedrock exposures in Caneyville soil. Bledsoe soil is generally more extensive on north aspects than on south aspects. Areas of Rock outcrop are less exposed on north aspects than on south aspects. The ridgetops of this complex are about 350 to 425 feet above the valley floor. Slopes range from 35 to 60 percent for Bledsoe soil and from 6 to 20 percent for Caneyville soil. Slopes of Bledsoe soil are slightly convex or slightly concave, and slopes of Caneyville soil are slightly convex. The mapped areas of this complex are 10 to 100 acres.

Bledsoe soil makes up about 53 percent of this map unit. Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil is silty clay. It is strong brown to a depth of 14 inches, strong brown and brownish yellow to a depth of 54 inches, and olive with brown mottles to a depth of 65.

This Bledsoe soil is medium in natural fertility and moderate in organic matter content. This soil ranges from medium acid to mildly alkaline throughout. The available water capacity is high, permeability is moderately slow to slow, and surface runoff is rapid. The root zone is deep. Shrink-swell potential is moderate in the lower part of the subsoil.

Limestone Rock outcrop makes up about 20 percent of this map unit.

Caneyville soil makes up about 13 percent of this map unit. Typically, the surface layer is yellowish brown silt loam about 5 inches thick. The upper part of the subsoil, to a depth of 20 inches, is yellowish red silty clay or clay, and the lower part, to a depth of 28 inches, is red and yellowish brown clay. Limestone bedrock is at a depth of 28 inches.

This Caneyville soil is medium in natural fertility and low in organic matter content. This soil ranges from very strongly acid to neutral in the surface layer and upper part of the subsoil. It is medium acid to mildly alkaline in the lower part of the subsoil. The available water capacity is moderate, permeability is moderately slow, and surface runoff is medium to rapid. The root zone is moderately deep. Shrink-swell potential is moderate. Depth to limestone bedrock is 20 to 40 inches.

Included with this complex in mapping are small areas of Latham soils; small areas of soils similar to Bledsoe soil except they are moderately deep to bedrock; areas of sandstone rock outcrops; small areas of shallow clayey soils; and small areas of shallow sandy soils. Also included are steep areas of Rubble land, and areas where Caneyville and Bledsoe soils are not present. The included soils make up about 14 percent of this complex.

Most areas of this complex are used for woodland, but a few areas are in permanent pasture.

This complex is suited to woodland, and potential productivity is high or very high for Bledsoe soil and moderately high for Caneyville soil. For Bledsoe soil, yellow-poplar, white oak, white ash, and northern red oak are preferred species on north aspects, and white oak and eastern white pine are preferred on south aspects. Eastern white pine, white oak, and white ash are preferred species for Caneyville soil. The main concerns in management are the erosion hazard, plant competition, and limited use of equipment because of steep slopes.

This complex has good potential for woodland wildlife habitat.

Most areas of this complex are not suited to cultivated crops, hay, pasture, and urban uses. Some areas that have slopes of less than 30 percent are poorly suited to permanent pasture. Steepness of slopes, rock outcrops, the erosion hazard, small isolated tracts, and proximity to rock ledges and short cliffs limit accessibility and use.

Bledsoe and Caneyville soils are in capability subclass VIIe. Rock outcrop is in capability subclass VIIIs. Bledsoe soil is in woodland suitability group 1r on north aspects and 2r on south aspects. Caneyville soil is in woodland suitability group 3x.

BlE—Bledsoe-Shelocta complex, 12 to 35 percent slopes. This map unit consists of deep, well drained soils on colluvial side slopes and benches. The areas of Bledsoe and Shelocta soils are so intermingled that they could not be separated at the scale selected for mapping. Bledsoe soil dominates the landscape where limestone rocks from the overlying geologic formations are well exposed. Shelocta soil dominates the landscape where the limestone rocks are covered with colluvium from overlying geologic rock formations. This benched landscape is about 220 to 300 feet above the valley floor. Slopes range from 12 to 35 percent but average about 20 percent. The mapped areas of this complex wind around mountainsides in narrow bands, and they range from 10 to 100 acres.

Bledsoe soil makes up about 55 percent of this map unit. Typically, the surface layer of the Bledsoe soil is brown silt loam about 8 inches thick. The subsoil is silty clay. It is strong brown to a depth of 14 inches, strong brown and brownish yellow to a depth of 54 inches, and olive with brown mottles to a depth of 65 inches.

This Bledsoe soil is medium in natural fertility and moderate in organic matter content. This soil is medium acid to mildly alkaline throughout. The available water capacity is high, permeability is moderately slow to slow, and surface runoff is rapid. The root zone is deep. Shrink-swell potential is moderate in the lower part of the subsoil.

Shelocta soil makes up about 25 percent of this map unit. Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is light yellowish brown, yellowish brown, and strong brown silt loam to a depth of 28 inches, strong brown channery silty clay loam with brown mottles to a depth of 52 inches, and yellowish brown channery silty clay loam with brown and gray mottles to a depth of 65 inches.

This Shelocta soil is medium in natural fertility and low to moderate in organic matter content. This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer has been limed. The available water capacity is high, permeability is moderate, and surface runoff is medium to rapid. The root zone is deep.

Included with this complex in mapping are small areas of Rubble land; areas of soils that have slopes of more than 35 percent; areas that have slopes of less than 12 percent; areas that have stones and boulders on the surface; soils containing more sand; and soils that do not have an argillic horizon. Also included on some north aspects and in coves are soils similar to Shelocta soil except they have a dark surface layer and are not as acid. The included soils make up about 20 percent of this complex.

Most areas of this complex are in woodland, but some areas are in permanent pasture.

This complex is well suited to woodland, and potential productivity is very high or high on north aspects. Yellow-poplar, white oak, white ash, and northern red oak are preferred species for Bledsoe and Shelocta soils on north aspects. Black walnut, eastern white pine, and shortleaf pine are also well suited to Shelocta soils on north aspects. On south aspects, white oak and eastern white pine are preferred species for Bledsoe soil, and eastern white pine, white oak, and shortleaf pine are preferred species for Shelocta soil. The main concerns of management are the erosion hazard, equipment limitations, plant competition, and seedling mortality on south aspects.

This complex has good potential for woodland wildlife habitat.

This complex is suited to permanent pasture, but seedbed preparation and maintaining a stand of grass is difficult because of equipment limitations on moderately steep and steep slopes and the very severe erosion hazard. Long-lived grasses and legumes are best suited to these soils.

This complex is poorly suited to cultivated crops, hay, and most urban uses. The erosion hazard, isolated tracts, difficulty using equipment because of the steepness of slopes, and stoniness are the main limitations.

This complex is in capability subclass VIe. Bledsoe soil is in woodland suitability group 1r on north aspects and 2r on south aspects. Shelocta soil is in woodland suitability group 2r on north aspects and 3r on south aspects.

Bo—Boonesboro silt loam, frequently flooded. This nearly level soil is moderately deep and well drained. It is on flood plains in long narrow valleys (fig. 7). Slopes are smooth and slightly convex or slightly concave and range from 0 to 3 percent. Some areas have been highly dissected by frequent flooding. The mapped areas are 10 to more than 100 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil is brown silt loam to a depth of 20 inches. The substratum is brown very gravelly silt loam. Hard limestone bedrock is at a depth of 34 inches.

This Boonesboro soil is medium in natural fertility and moderate in organic matter content. This soil is slightly acid to mildly alkaline throughout. The available water capacity is moderate, permeability is moderate to rapid, and surface runoff is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately deep. Depth to limestone bedrock is 20 to 40 inches. This soil is frequently flooded.

Included with this soil in mapping are small areas of Huntington soils, areas of soils that are greater than 40 inches deep to bedrock, and areas that are less than 20 inches deep to bedrock. Also included are areas of soils that are eroded and areas that are not suited to cultivated crops because of flooding.

This Boonesboro soil is used mainly for hay, pasture, and corn. A few areas are used for burley tobacco.

This soil is suited to most cultivated crops. Suitable areas of this soil can be continuously cultivated if the organic matter content and soil structure are maintained. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. In some areas crops can be damaged by flooding.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, reed canarygrass, and annual lespedeza are better suited to this soil than most other hay and pasture plants. Plants that require

Figure 7.—Cattle grazing on an area of Boonesboro silt loam, frequently flooded.

deep root zones or that are not tolerant to flooding should be avoided.

This soil is well suited to eastern cottonwood, sweetgum, yellow-poplar, white ash, and American sycamore. The main concern in management of woodland is plant competition.

This soil is poorly suited to most urban uses because of flooding and moderate depth to bedrock.

This soil is in capability subclass IIs and in woodland suitability group 1o.

BrC—Brassfield silty clay loam, 6 to 12 percent slopes, eroded. This sloping, loamy soil is moderately deep and well drained. It is on narrow upland ridges. Slopes are short, smooth, and convex. The mapped areas are 5 to 20 acres.

Typically, the surface layer is dark brown silty clay loam about 6 inches thick. The subsoil, to a depth of 15 inches, is light olive brown silty clay loam with dark brown coatings. The substratum is olive yellow very channery loam. Dolomite and interbedded calcareous shale and siltstone are at a depth of 27 inches.

This Brassfield soil is medium in natural fertility and moderate in organic matter content. This soil is neutral to moderately alkaline throughout. The available water capacity and permeability are moderate. Surface runoff is rapid. The plow layer must be cultivated under proper moisture conditions to prevent clodding or crusting. The root zone is moderately deep. Dolomite interbedded with soft calcareous shale and siltstone is at a depth of 20 to 40 inches.

Included with this soil in mapping are areas of Shrouts and Beasley soils. Also included are areas of soils that are severely eroded and areas that have gullies.

This Brassfield soil is used mainly for pasture and hay.

This soil is poorly suited to most cultivated crops. It produces low yields and is difficult to manage because of the poor tilth. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour strip cropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is suited to eastern redcedar, Virginia pine, and scotch pine. The main concern in management of woodland is seedling mortality.

This soil is poorly suited to most urban uses. Depth to bedrock and steepness of slope, are the limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IVe and in woodland suitability group 4o.

BsE—Brassfield-Shrouts-Beasley complex, 12 to 35 percent slopes, eroded. This map unit consists of moderately deep Brassfield and Shrouts soils and deep Beasley soil. The areas of these soils are so intermingled that they could not be separated at the scale selected for mapping. Typically, these well drained soils are on hillsides. The mapped areas are about 100 to 650 feet wide and are 10 to more than 200 acres (fig. 8).

Brassfield soil makes up about 32 percent of this map unit. Typically, the surface layer is dark brown silty clay loam about 6 inches thick. The subsoil is light olive brown silty clay loam that has dark brown coatings to a depth of 15 inches. The substratum is olive yellow very channery loam. Dolomite and interbedded calcareous shale and siltstone are at a depth of 27 inches.

This Brassfield soil is medium in natural fertility and moderate in organic matter content. This soil is neutral to moderately alkaline throughout. The available water capacity is moderate, permeability is moderate, and surface runoff is rapid. The root zone is moderately deep. Dolomite and interbedded soft calcareous shale and siltstone are at a depth of 20 to 40 inches.

Shrouts soil makes up about 28 percent of this map unit. Typically, the surface layer is brown silty clay loam about 4 inches thick. The subsoil, to a depth of 34 inches, is olive or pale olive silty clay that has olive gray, greenish gray, and olive yellow mottles. The substratum, to a depth of 38 inches, is greenish gray silty clay that has olive yellow mottles. Soft calcareous shale bedrock is at a depth of 38 inches.

This Shrouts soil is medium in natural fertility and low in organic matter content. This soil is strongly acid to moderately alkaline in the surface layer and subsoil. It is neutral to moderately alkaline in the substratum. The available water capacity is moderate, permeability is slow, and surface runoff is rapid. The root zone is moderately deep. Shrink-swell potential is moderate. Depth to soft shale bedrock is 20 to 40 inches.

Beasley soil makes up about 21 percent of this map unit. Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The subsoil is silty clay. It is strong brown to a depth of 30 inches and brownish yellow with light brownish gray mottles to a depth of 36 inches. The substratum is olive yellow silty clay that has greenish gray mottles. Soft calcareous shale, interbedded with dolomitic siltstone and sandstone, is at a depth of 52 inches.

This Beasley soil is medium in natural fertility and low in organic matter content. This soil is neutral to very strongly acid in the surface layer and upper part of the subsoil. It is medium acid to moderately alkaline in the lower part of the subsoil and neutral to moderately alkaline in the substratum. The available water capacity is high, permeability is moderately slow, and surface runoff is medium to rapid. The root zone is moderately deep. Shrink-swell potential is moderate.

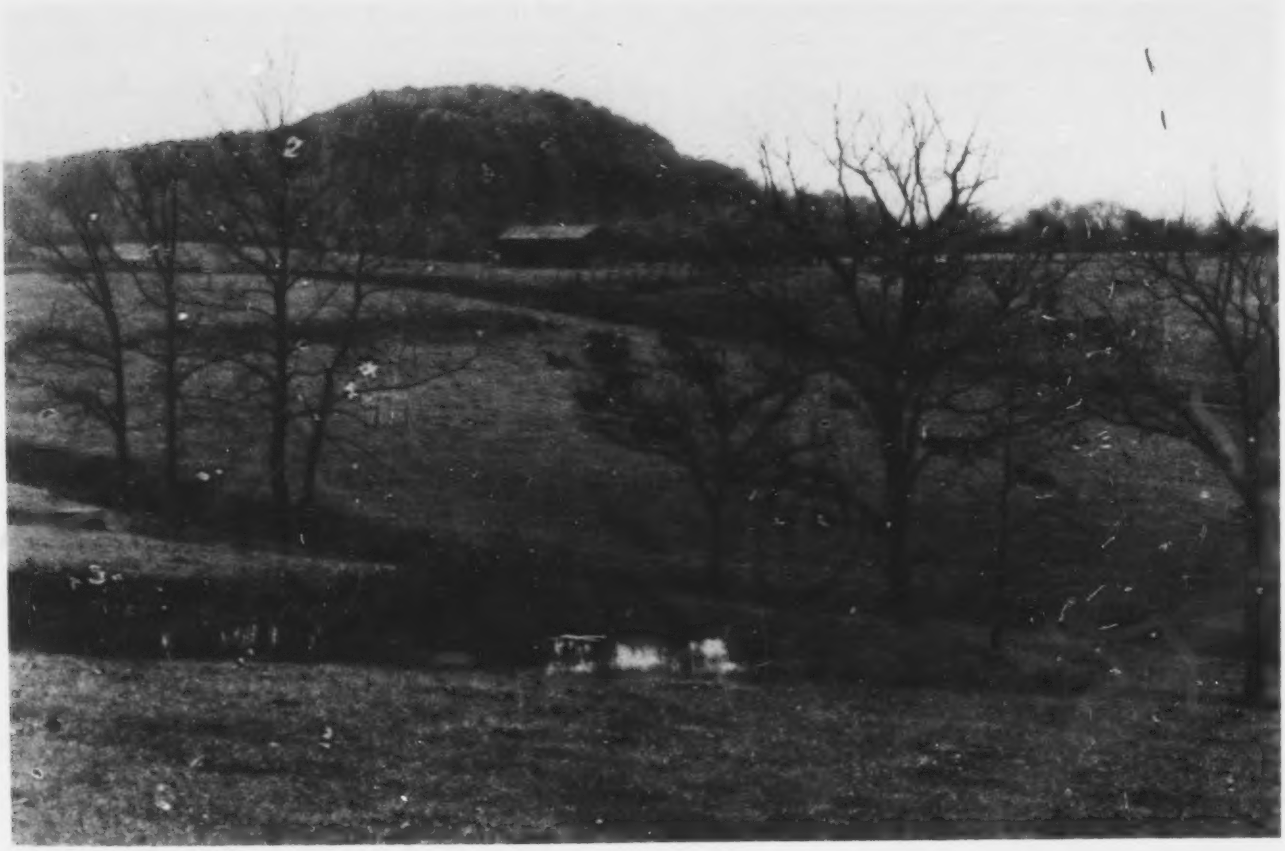


Figure 8.—The foreground and the area where the dairy cattle are grazing is in the Brassfield-Shrouts-Beasley complex, 12 to 35 percent slopes, eroded. The barn in the background is on an area of Tilsit soils, and the steep, wooded area is mainly Trappist and Colyer soils.

Included with this complex in mapping are dolomite boulders, dolomite rock outcrops, shale rock outcrops and soils similar to Brassfield soil except they have a clayey subsoil. Included are areas of soils that have slopes of more than 35 percent and small areas that have slopes of less than 12 percent. Also included are severely eroded soils, gullies, and small areas of Trappist, Colyer, Crider, Cynthiana, Faywood, and Woolper soils. The included soils make up about 19 percent of this complex.

Most areas of this complex are used for pasture, hay, scrub brush, and woodland.

This complex is suited to permanent pasture but poorly suited to cultivated crops and hay. The main concerns in management are the very severe erosion hazard and poor tilth of Brassfield and Shrouts soils and the difficulty using equipment on moderately steep and steep slopes. Some of the better suited pasture and hay plants are tall fescue, Kentucky bluegrass, orchardgrass, red clover, and Ladino clover.

This complex is suited to Virginia pine and eastern redcedar. White oak is suited to Shrouts and Beasley soils. Potential productivity is moderate for Brassfield and Shrouts soils and moderately high for Beasley soils. The main concerns in management of woodland are the limited use of equipment, the erosion hazard, and seedling mortality. Plant competition is a management concern for Beasley soils.

This complex has a fair potential for woodland wildlife habitat.

This complex is poorly suited to urban uses. Moderately slow and slow permeability, depth to bedrock, and steepness of slopes are the main

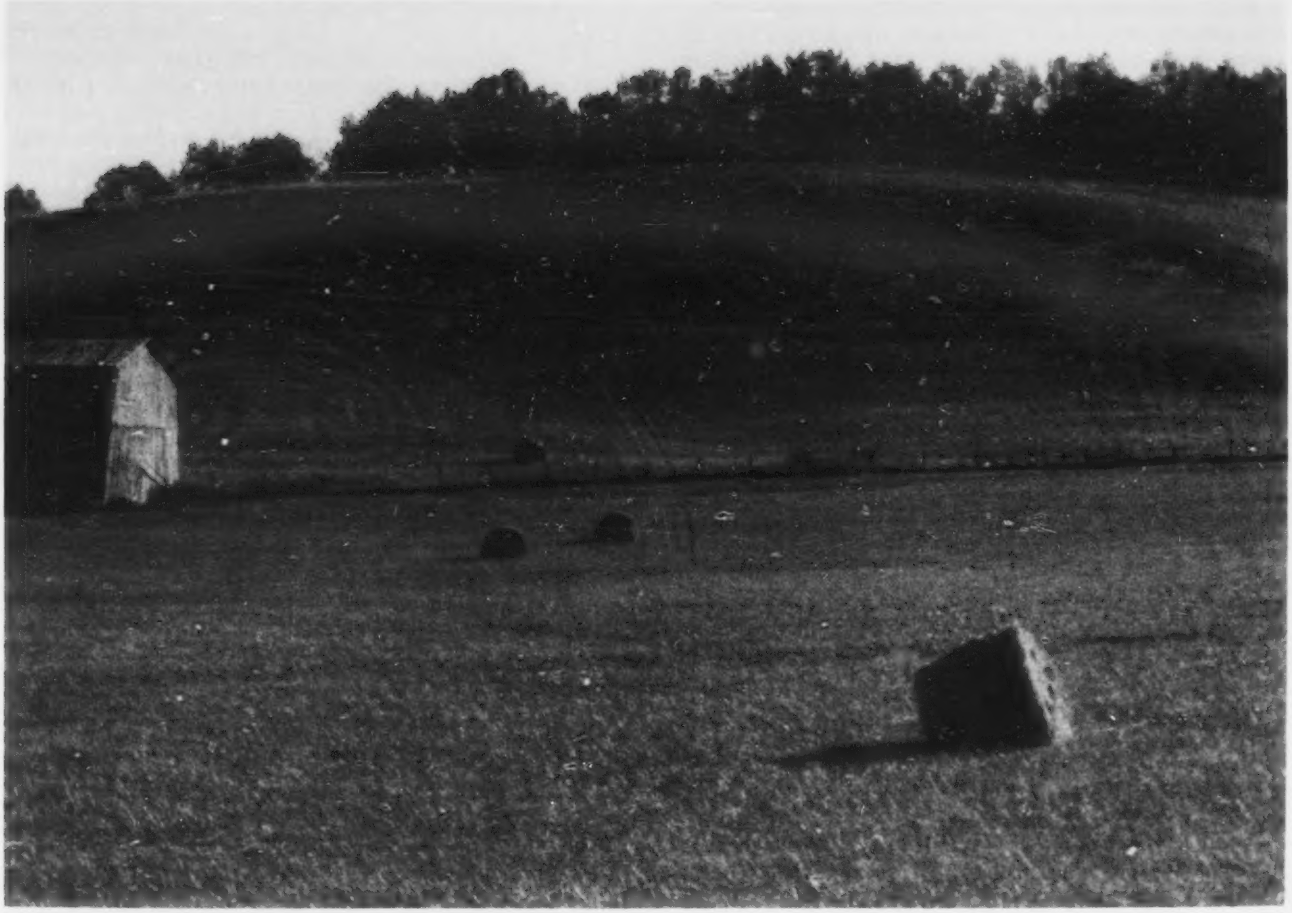


Figure 9.—The steep hillside in the background is a typical landscape of Colyer-Trappist complex, 25 to 60 percent slopes, eroded. Shelocta silt loam, 6 to 15 percent slopes, is at the base of the hill on both sides of the fence. Tilsit silt loam, 0 to 6 percent slopes, is in the foreground.

limitations. Low strength is a limitation for local roads and streets.

This map unit is in capability subclass VIe. Brassfield soil is in woodland suitability group 4r; Shrouts soil is in woodland suitability group 4c; and Beasely soil is in woodland suitability group 3c.

CoF—Colyer-Trappist complex, 25 to 60 percent slopes, eroded. This map unit consists of shallow Colyer soil and moderately deep Trappist soil. The areas of these soils are so intermingled that they could not be separated at the scale selected for mapping. These well drained soils are on steep upland hillsides (fig. 9). The mapped areas are about 200 to 1,500 feet wide and are 10 to more than 100 acres.

Colyer soil makes up about 51 percent of this map unit. Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil is strong brown very shaly silty clay to a depth of 10 inches. The substratum is strong brown extremely shaly silty clay with grayish brown mottles. Hard shale is at a depth of 16 inches.

This Colyer soil is low in natural fertility and organic matter content. This soil is medium acid to extremely acid in the surface layer, except in areas where it has been limed. The soil is very strongly acid or extremely acid in the subsoil and substratum. The available water capacity is low, permeability is slow, and surface runoff is rapid. The root zone is shallow. Hard shale bedrock is at a depth of 10 to 20 inches.

Trappist soil makes up about 34 percent of this map unit. Typically, the surface layer is brown silty clay loam about 6 inches thick. The subsoil is strong brown silty clay with yellowish red mottles to a depth of 20 inches. It is strong brown shaly silty clay with red and gray mottles to a depth of 26 inches. Soft bedrock is at a depth of 26 inches, and hard shale bedrock is at a depth of 55 inches.

This Trappist soil is low in natural fertility and organic matter content. This soil is strongly acid to extremely acid throughout, except in areas where the surface layer has been limed. The available water capacity is moderate, permeability is moderately slow to slow, and surface runoff is rapid. The root zone is moderately deep. Shrink-swell potential is moderate. Soft shale bedrock is at a depth of 20 to 40 inches.

Included with this complex in mapping are small areas of Lenberg and Shelocta soils; areas of shale rock outcrops; areas of soils that have slopes of more than 25 percent; siltstone boulders; and moderately deep soils that have less clay. The included soils make up about 15 percent of this complex.

Most areas of this complex are used for woodland. Some areas are in permanent pasture.

This complex is not suited to cultivated crops, hay, or pasture. Difficulty in using equipment on steep and very steep slopes, shallow depth to bedrock, and the very severe hazard of erosion are the main limitations.

This complex is suited to Virginia pine, white oak, and chestnut oak. Potential productivity is moderate to low for Colyer soil and moderately high for Trappist soil. The main concerns in management of woodland are limited use of equipment because of steep slopes and the erosion hazard. Seedling mortality is a management concern for Colyer soil. Plant competition is a management concern for Trappist soil.

This complex has poor to fair potential for woodland wildlife habitat.

This soil is not suited to urban uses because of the steep slopes, depth to bedrock, and the clayey textures.

This complex is in capability subclass VIIs. Colyer soil is in woodland suitability group 4d on north aspects and 5d on south aspects. Trappist soil is in woodland suitability group 3c.

CrB—Crider silt loam, 2 to 6 percent slopes. This gently sloping soil is deep and well drained. It is on narrow and broad ridges scattered throughout the county. Slopes are smooth and convex. The mapped areas are 5 to 80 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil is brown or strong brown silt loam to a depth of 28 inches and red and yellowish red silty clay loam to a depth of 75 inches.

This Crider soil is high in natural fertility and moderate in organic matter content. This soil is neutral to strongly acid in the surface layer and the upper part of the subsoil. It is slightly acid to very strongly acid in the lower part of the subsoil. The available water capacity is high, permeability is moderate, and surface runoff is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. The lower part of the subsoil has moderate shrink-swell potential.

Included with this soil in mapping are small areas of Lowell, Shelbyville, and Nicholson soils. Also included are a few areas of soils that have slopes of more than 6 percent.

This Crider soil is used mainly for hay, pasture, burley tobacco, and corn.

This soil is well suited to cultivated crops, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, alfalfa, smooth bromegrass, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is well suited to yellow-poplar, black walnut, white ash, northern red oak, white oak, eastern white pine, and shortleaf pine. The main concern in management of woodland is plant competition.

This soil is well suited to most urban uses. Low strength is a severe limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 1o.

CrC—Crider silt loam, 6 to 15 percent slopes. This sloping soil is deep and well drained. It is on narrow ridges and hillsides throughout the county (fig. 10). Some areas of this soil have karst topography. Slopes are short to long, smooth, and convex. The mapped areas are 5 to 50 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil is brown or strong brown silt loam to a depth of 28 inches and red and yellowish red silty clay loam to a depth of 75 inches.

This Crider soil is high in natural fertility and moderate in organic matter content. This soil is neutral to strongly acid in the surface layer and the upper part of the subsoil. It is slightly acid to very strongly acid in the lower part of the subsoil. The available water capacity is high, permeability is moderate, and surface runoff is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. The lower part of the subsoil has moderate shrink-swell potential.

Included with this soil in mapping are small areas of Lowell, Beasley, and Shelbyville soils. Also included are

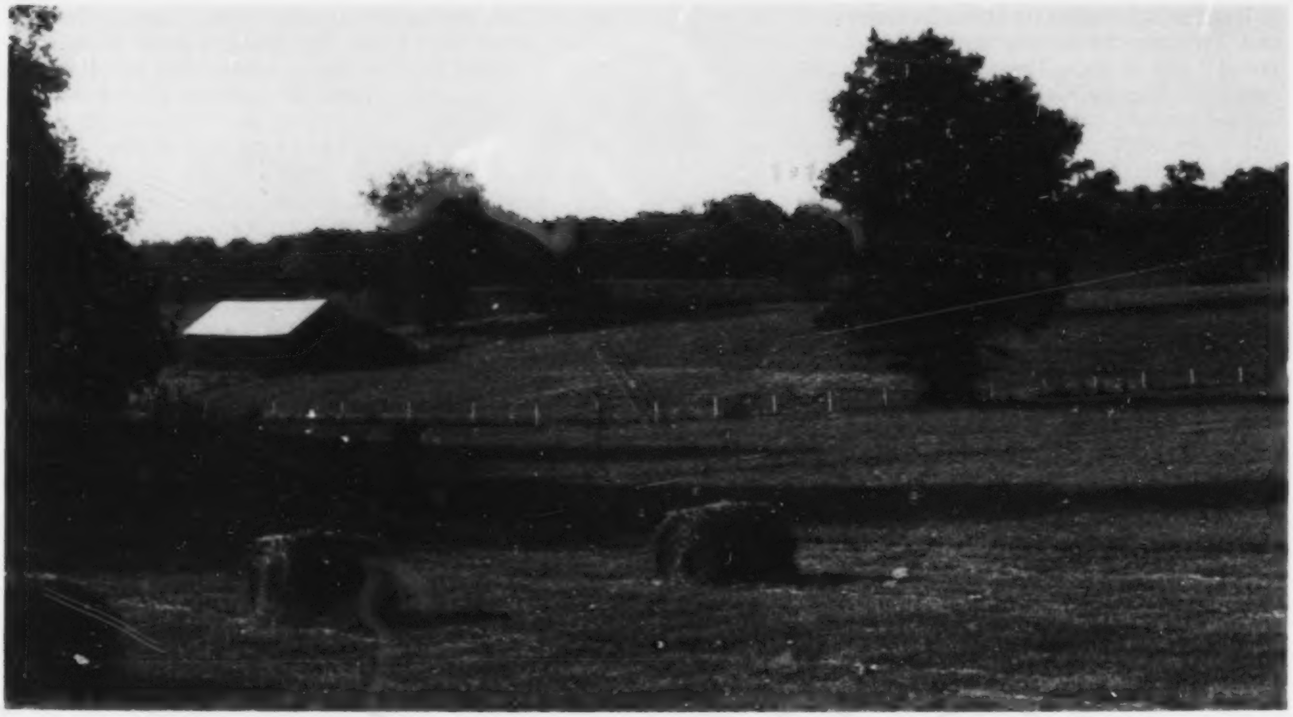


Figure 10.—The area around the barn is Crider silt loam, 6 to 15 percent slopes. Nicholson silt loam, 2 to 8 percent slopes, is in the foreground.

a few small areas of soils that have slopes of less than 6 percent or more than 15 percent.

This Crider soil is used mainly for hay and pasture. Some areas are used for burley tobacco and corn.

This soil is suited only to occasional cultivation. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to hay and pasture. Tall fescue, orchardgrass, red clover, alfalfa, Ladino clover, Kentucky bluegrass, and annual lespedeza are commonly grown.

This soil is well suited to yellow-poplar, black walnut, white ash, northern red oak, white oak, eastern white pine, and shortleaf pine. The main concern in management of woodland is plant competition.

This soil is suited to most urban uses. It has severe limitations for sewage lagoon areas, and small commercial buildings. Steepness of slope is the main limitation. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe, and in woodland suitability group 1o.

Cu—Cuba silt loam, occasionally flooded. This nearly level soil is deep and well drained. It is on flood plains along major streams in the southern part of the county. Slopes are smooth, slightly convex or slightly concave, and range from 0 to 3 percent. The mapped areas are 10 to more than 100 acres.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The subsoil is yellowish brown silt loam to a depth of 50 inches. The substratum is yellowish brown silt loam to a depth of 65 inches.

This Cuba soil is medium in natural fertility and moderate in organic matter content. This soil is very strongly acid throughout, except in areas where the surface layer has been limed. The available water capacity is high, permeability is moderate, and surface runoff is slow. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. This soil is subject to occasional flooding.

Included with this soil in mapping are small areas of Stendal and Morehead soils. Also included are small areas of soils similar to Cuba soils except that they have more sand. Also included are areas of soils that are eroded and frequently flood, and small areas that are gravelly.

This Cuba soil is used mainly for corn, soybeans, hay, and pasture. A few areas are used for burley tobacco.

This soil is well suited to most cultivated crops, such as corn, soybeans, tobacco, and small grain. It can be continually cultivated if the organic matter content and soil structure are maintained. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. In some years crops are damaged by floods.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, and annual lespedeza are commonly grown.

This soil is well suited to yellow-poplar, eastern white pine, white ash, shortleaf pine, white oak, northern red oak, and black walnut. The main concern in management of woodland is plant competition.

This soil is poorly suited to most urban uses because of occasional flooding.

This soil is in capability subclass IIw, and in woodland suitability group 1o.

ElB—Elk silt loam, 2 to 6 percent slopes. This gently sloping soil is deep and well drained. It is on stream terraces along major streams. Slopes are smooth and convex. The mapped areas are 5 to 25 acres.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The subsoil is strong brown silty clay loam to a depth of 48 inches and yellowish brown silty clay to a depth of 58 inches. The substratum to a depth of 65 inches is yellowish brown silty clay with olive yellow mottles.

This Elk soil is medium in natural fertility and organic matter content. This soil is slightly acid to very strongly acid throughout, except in areas where the surface layer has been limed. The substratum is slightly acid to strongly acid. The available water capacity is high, permeability is moderate, and surface runoff is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep.

Included with this soil in mapping are small areas of Lowell and Faywood soils, small areas of soils that are moderately well drained, and small areas that have slopes of more than 6 percent. Also included are small areas of soils that are subject to flooding.

This Elk soil is used mainly for hay, pasture, burley tobacco, and corn.

This soil is well suited to cultivated crops, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, alfalfa, smooth bromegrass, and annual lespedeza are commonly grown.

This soil is well suited to yellow-poplar, black walnut, eastern white pine, white ash, shortleaf pine, northern red oak, and white oak. The main concern in management of woodland is plant competition.

This soil is well suited to most urban uses. Low strength is a severe limitation for local roads and streets. Flooding is a severe limitation in a few areas.

This soil is in capability subclass IIe, and in woodland suitability group 2o.

ElC—Elk silt loam, 6 to 12 percent slopes. This sloping soil is deep and well drained. It is on stream terraces along major streams. Slopes are short, smooth, and convex. The mapped areas are 5 to 25 acres.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The subsoil is strong brown silty clay loam to a depth of 48 inches and yellowish brown silty clay to a depth of 58 inches. The substratum to a depth of 65 inches is yellowish brown silty clay with olive yellow mottles.

This Elk soil is medium in natural fertility and organic matter content. This soil is slightly acid to very strongly acid throughout, except in areas where the surface layer is limed. The substratum is slightly acid to strongly acid. The available water capacity is high, permeability is moderate, and surface runoff is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep.

Included with this soil in mapping are small areas of Lowell and Faywood soils, small areas of soils that have slopes of less than 6 percent, and small areas that have slopes of more than 12 percent. Also included are small areas of soils that are subject to flooding.

This Elk soil is used mainly for hay and pasture. A few areas are used for burley tobacco and corn.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, and annual lespedeza are commonly grown.

This soil is suited only to occasional cultivation. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to yellow-poplar, black walnut, eastern white pine, white ash, shortleaf pine, northern red oak, and white oak. The main concern in management of woodland is plant competition.

This soil is suited to most urban uses if flooding is not a hazard. It has severe limitations if used for sewage lagoon areas and small commercial buildings. Steepness of slope is the main limitation. Low strength is a limitation for local roads and streets. Flooding is a severe limitation in a few areas.

This soil is in capability subclass IIIe, and in woodland suitability group 2o.

FaC—Faywood silt loam, 6 to 12 percent slopes. This sloping, clayey soil is moderately deep and well drained. It is on narrow upland ridges. Slopes are short, smooth, and convex. The mapped areas are 5 to 100 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is yellowish brown silty clay or clay to a depth of 22 inches and light olive brown silty clay with olive and brown mottles to a depth of 33 inches. Hard limestone bedrock is at a depth of 33 inches.

This Faywood soil is medium in natural fertility and low in organic matter content. This soil is strongly acid to mildly alkaline throughout. The available water capacity is moderate, permeability is moderately slow to slow, and surface runoff is medium to rapid. The plow layer is easy to till, except in small eroded spots. The root zone is moderately deep. Shrink-swell potential is moderate. Depth to limestone bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Aaron, Lowell, and Cynthiana soils, and rock outcrop. Also included are small areas of soils that have slopes of more than 12 percent or less than 6 percent.

This Faywood soil is used mainly for hay and pasture. Some areas are used for burley tobacco and corn.

This soil is suited only to occasional cultivation. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, and annual lespedeza are commonly grown.

This soil is suited to white oak and white ash. The main concerns in management of woodland are plant competition and limited use of equipment because of the clayey subsoil.

This soil is poorly suited for most urban uses. Moderately slow to slow permeability, moderate depth to bedrock, steepness of slope, and the clayey subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 3c.

FaD—Faywood silt loam, 12 to 20 percent slopes. This moderately steep, clayey soil is moderately deep and well drained. It is on narrow upland ridges and hillsides. Slopes are short to long, smooth, and convex. The mapped areas are 5 to 75 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is yellowish brown silty clay or clay to a depth of 22 inches and light olive brown silty clay with olive and brown mottles to a depth of 33 inches. Hard limestone bedrock is at a depth of 33 inches.

This Faywood soil is medium in natural fertility and low in organic matter content. This soil is strongly acid to mildly alkaline throughout. The available water capacity is moderate, permeability is moderately slow to slow, and surface runoff is rapid. The plow layer is easy to till, except in small eroded spots. The root zone is moderately deep. Shrink-swell potential is moderate. Depth to limestone bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Lowell and Cynthiana soils. Also included are small areas of soils that have slopes of more than 20 percent or less than 12 percent.

This Faywood soil is used mainly for pasture and hay.

This soil is poorly suited to cultivated crops. The erosion hazard is very severe if the plant cover is removed. This soil can be cultivated occasionally if erosion control practices are used. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, and annual lespedeza are commonly grown. Preparing a seedbed is difficult because of the very severe hazard of erosion on moderately steep slopes and limited use of equipment.

This soil is suited to white oak and white ash. The main concerns in management of woodland are limited use of equipment, the erosion hazard, and plant competition.

This soil is poorly suited to most urban uses. Moderately slow to slow permeability, moderate depth to bedrock, steepness of slope, and the clayey subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IVe and in woodland suitability group 3c.

FcE—Faywood-Cynthiana complex, 12 to 35 percent slopes, eroded. This map unit consists of moderately deep Faywood soil and shallow Cynthiana soil. The areas of these soils are so intermingled that they could not be separated at the scale selected for mapping. These well drained to somewhat excessively drained soils are on hillsides. The mapped areas are 200 to 1,000 feet wide, and are 10 to over 200 acres.

Faywood soils make up about 46 percent of this map unit. Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is yellowish brown silty clay or clay to a depth of 22 inches and light olive brown silty clay with olive and brown mottles to a depth of 33 inches. Hard limestone bedrock is at a depth of 22 inches.

This Faywood soil is medium in natural fertility and low in organic matter content. This soil is strongly acid to mildly alkaline throughout. The available water capacity is moderate, permeability is moderately slow to slow, and surface runoff is medium to rapid. The plow layer is easy to till, except in small eroded spots. The root zone is moderately deep. Shrink-swell potential is moderate. Depth to limestone bedrock is 20 to 40 inches.

Cynthiana soil makes up about 42 percent of this map unit. Typically, the surface layer is brown silty clay loam about 4 inches thick. The subsoil is yellowish brown clay to a depth of 11 inches and light olive brown flaggy clay to a depth of 17 inches. Limestone bedrock is at a depth of 17 inches.

This Cynthiana soil is medium in natural fertility and moderate in organic matter content. This soil is slightly acid to mildly alkaline throughout. The available water capacity is low, permeability is moderately slow, and surface runoff is rapid. The root zone is shallow. Shrink-swell potential is moderate. Depth to limestone bedrock is 10 to 20 inches.

Included with this complex in mapping are small areas of Lowell and Woolper soils, and areas of soils that have a flaggy surface, sink holes, and limestone rock outcrops. Also included are areas of soils that have slopes of less than 12 percent or more than 35 percent. The included soils make up about 12 percent of this map unit.

Most areas of this complex are used for permanent pasture or hay. A few areas are in woodland.

This complex is suited to permanent pasture (fig. 11), but poorly suited to cultivated crops and hay. The very severe erosion hazard, shallow depth to bedrock, and limited use of equipment on moderately steep and steep slopes are the main limitations. Kentucky bluegrass, tall fescue, orchardgrass, Ladino clover, and annual lespedeza are better suited to this soil than most other pasture plants.

Faywood soil is suited to white oak and white ash. Cynthiana soil is suited to eastern redcedar and Virginia pine. Potential productivity is moderately high for Faywood soil and moderate for Cynthiana soil. The main concerns in management of woodland for this complex are limited use of equipment and the erosion hazard. Seedling mortality is a management concern for Cynthiana soil, and plant competition is a management concern for Faywood soil.

This complex has fair potential for woodland wildlife habitat.

This complex is poorly suited to urban uses. Moderately slow permeability, depth to bedrock, and steepness of slopes, are the main limitations. Low strength is a limitation for local roads and streets.

This complex is in capability subclass VIe. Faywood soil is in woodland suitability group 3c. Cynthiana soil is in woodland suitability group 4d.

FIE—Faywood-Lowell complex, 12 to 35 percent slopes. This map unit consists of moderately deep Faywood soil and deep Lowell soil. The areas of the soils are so intermingled that they could not be separated at the scale selected for mapping. These well drained soils are on hillsides. The mapped areas are 200 to 1,000 feet wide, and are 10 to over 200 acres.

Faywood soil makes up about 56 percent of this map unit. Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is yellowish brown silty clay or clay to a depth of 22 inches and light olive brown silty clay with olive and brown mottles to a depth of 33 inches. Limestone bedrock is at a depth of 33 inches.

This Faywood soil is medium in natural fertility and low in organic matter content. This soil is strongly acid to mildly alkaline throughout. The available water capacity is moderate, permeability is moderately slow to slow, and surface runoff is rapid. The root zone is moderately deep. Shrink-swell potential is moderate. Depth to limestone bedrock is 20 to 40 inches.

Lowell soil makes up about 30 percent of this map unit. Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil is yellowish brown silty clay to a depth of 14 inches, yellowish brown clay to a depth of 35 inches, and light olive brown clay to a depth of 50 inches. Limestone bedrock is at a depth of 50 inches.

This Lowell soil is medium in natural fertility and low in organic matter content. This soil is slightly acid to very strongly acid in the surface layer and the upper part of the subsoil. It is strongly acid to mildly alkaline in the lower part of the subsoil. The available water capacity is high, permeability is moderately slow, and surface runoff is rapid. The root zone is deep. Shrink-swell potential is moderate.

Included with this complex in mapping are small areas of Cynthiana, Shelbyville, Crider, and Aaron soils. Also included are small areas of soils that have slopes of more than 35 percent or less than 12 percent and areas of moderately deep soils that have less clay, limestone rock outcrops, and sink holes. The included soils make up about 14 percent of this map unit.

Most areas of this complex are used for pasture or hay. A few areas are in woodland.

This complex is suited to permanent pasture but poorly suited to cultivated crops and hay. The very severe erosion hazard and difficulty using equipment on moderately steep and steep slopes are the main

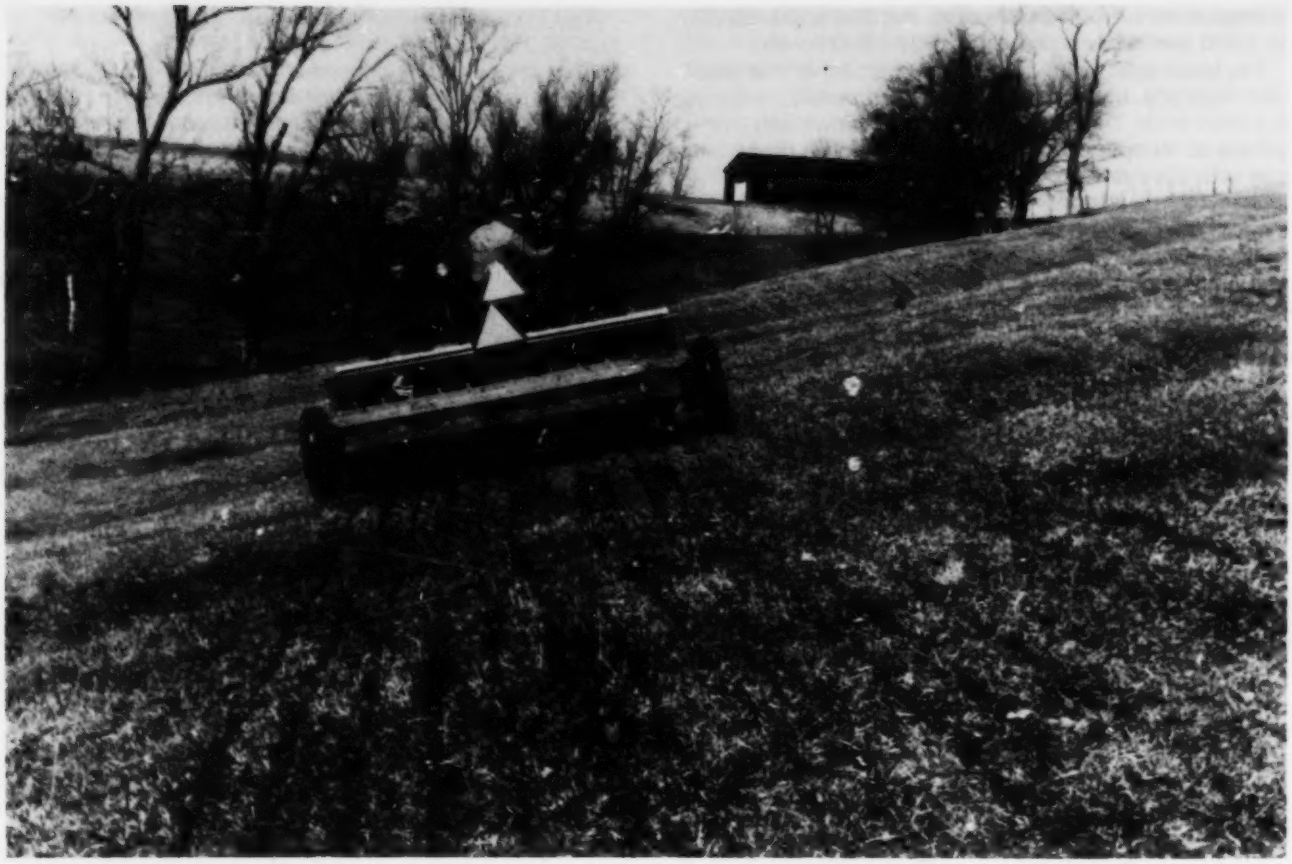


Figure 11.—A no-till renovator is being used to re-establish pasture on Faywood-Cynthiana complex, 12 to 35 percent slopes, eroded.

limitations. Kentucky bluegrass, tall fescue, orchardgrass, Ladino clover, and annual lespedeza are better suited to this soil than most other pasture plants.

This complex is suited to white oak, and white ash. Potential productivity is moderately high for Faywood soil and high for Lowell soil. The main concerns in management of woodland are limited use of equipment, the erosion hazard, and plant competition.

This complex has good potential for woodland wildlife habitat.

This complex is poorly suited to urban uses. Moderately slow and slow permeability, depth to bedrock, and steepness of slope are the main limitations. Low strength is a limitation for local roads and streets.

This complex is in capability subclass VIe. Faywood soil is in woodland suitability group 3c. Lowell soil is in woodland suitability group 2c.

Hu—Huntington silt loam, occasionally flooded. This nearly level soil is deep and well drained. It is on flood plains along major streams. Slopes are smooth, slightly convex or slightly concave, and range from 0 to 3 percent. The mapped areas are 10 to more than 100 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsurface layer is dark brown silt loam to a depth of 21 inches. The subsoil is brown silt loam to a depth of 65 inches.

This Huntington soil is high in natural fertility and organic matter content. This soil is medium acid to mildly alkaline throughout. The available water capacity is high, permeability is moderate, and surface runoff is slow. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. This soil is subject to occasional flooding.

Included with this soil in mapping are small areas of moderately well drained and somewhat poorly drained soils and small areas of Boonesboro, Elk, and Woolper soils.

This Huntington soil is used mainly for hay, pasture, and corn, but a few areas are used for burley tobacco.

This soil is well suited to most cultivated crops, such as corn, soybeans, tobacco, and small grain. It can be continually cultivated if the organic matter content and soil structure are maintained. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. In some years, crops are damaged by floods.

This soil is well suited to pasture and hay. Potential productivity is high for tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, Kentucky bluegrass, and annual lespedeza.

This soil is well suited to yellow-poplar, black walnut, shortleaf pine, white ash, northern red oak, American sycamore, and eastern white pine. The main concern in management of woodland is plant competition.

This soil is poorly suited to most urban uses because of occasional flooding.

This soil is in capability subclass IIw, and in woodland suitability group 1o.

LaF—Latham-Shelocta-Rock outcrop complex, 20 to 60 percent slopes. This map unit is on steep and very steep uplands. The moderately deep, moderately well drained Latham soil is on narrow ridges and upper side slopes. The deep, well drained Shelocta soil is on colluvial side slopes below the Latham soil and above the Rock outcrop. The areas of these soils occur in a regular repeating pattern, but they could not be separated at the scale selected for mapping. The ridgetops of this complex are about 380 to 540 feet above the valley floor. Slopes range from 20 to 60 percent but average about 40 percent. Latham soil has smooth, convex slopes. Shelocta soil has smooth, slightly convex or slightly concave slope. The mapped areas of this complex are 10 to more than 100 acres.

Latham soil makes up about 30 percent of this map unit. Typically, the surface layer is dark grayish brown silt loam about 3 inches thick. The subsoil is brownish yellow silt loam to a depth of 6 inches, strong brown silty clay loam to a depth of 13 inches, and yellowish red silty clay with light brownish gray mottles to a depth of 21 inches. The substratum is strong brown and gray very shaly silty clay. Soft acid shale is at a depth of 32 inches.

This Latham soil is low in natural fertility and organic matter content. This soil is strongly acid to extremely acid throughout. The available water capacity is moderate, permeability is slow, and surface runoff is rapid. A seasonal high water table is at a depth of 18 to 36 inches. Shrink-swell potential is moderate. The root zone and depth to soft shale bedrock is 20 to 40 inches.

Shelocta soil makes up about 28 percent of this map unit. Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is light yellowish brown, yellowish brown, and strong brown silt loam to a depth of 28 inches, strong brown channery silty clay loam that has brownish mottles to a depth of 52 inches, and yellowish brown channery silty clay loam that has brownish and grayish mottles to a depth of 65 inches.

This Shelocta soil is medium in natural fertility and low to moderate in organic matter content. This soil is strongly acid or very strongly acid throughout. The available water capacity is high, permeability is moderate, and surface runoff is medium to rapid. The root zone is deep.

Sandstone and limestone Rock outcrop makes up about 22 percent of this map unit. Rock outcrop forms ledges and short vertical cliffs below the Shelocta soil. Rock outcrop is not exposed on some north aspects and in coves.

Included with this complex in mapping are small areas of Rubble land, Bledsoe soils, and moderately deep and deep soils that have less clay. Included on some north aspects and in coves are soils similar to Shelocta soil except they have a dark surface layer and are more acid. Also included are a few narrow ridges that could not be delineated. The included soils make up about 20 percent of this map unit.

Most areas of this complex are in woodland, but a few areas are used for permanent pasture.

Most areas of this complex are not suited to cultivated crops, hay, pasture, and urban uses. Some areas that have slopes of less than 30 percent are poorly suited to permanent pasture. The very severe hazard of erosion, difficulty using equipment because of steepness of slopes, and proximity to rock ledges and cliffs are the main limitations.

This complex is suited to woodland. Potential productivity is moderately high to moderate for Latham soil and high to moderately high for Shelocta soil. Chestnut oak, white oak, and shortleaf pine are suited to Latham soil on both north and south slopes; eastern white pine is suited to Latham soil on north slopes. Eastern white pine, yellow-poplar, black walnut, white oak, white ash, northern red oak, and shortleaf pine are suited to Shelocta soil on north slopes; White oak, eastern white pine, and shortleaf pine are suited to Shelocta soil on south slopes.

This complex has good potential for woodland wildlife habitat.

Latham and Shelocta soils are in capability subclass VIIe. Rock outcrop is in capability subclass VIIIs. Latham soil is in woodland suitability group 3c on north aspects and 4c on south aspects. Shelocta soil is in woodland suitability group 2r on north aspects and 3r on south aspects.

LeC—Lenberg silt loam, 6 to 12 percent slopes, eroded. This sloping, clayey soil is moderately deep and well drained. It is on narrow ridges in the southern part of the county. Slopes are short, smooth, and convex. The mapped areas are 5 to 50 acres.

Typically, the surface layer is brown silt loam about 3 inches thick. The subsoil is silty clay loam. The upper part of the subsoil is yellowish brown and strong brown with light yellowish brown mottles. The lower part to a depth of 28 inches, is yellowish red and mottled dark yellowish brown and light olive gray. The substratum is mottled dark yellowish brown and light brownish gray shaly silty clay. Soft shale is at a depth of 33 inches.

This Lenberg soil is low in natural fertility and organic matter content. This soil is strongly acid or very strongly acid throughout. The available water capacity is moderate, permeability is moderately slow, and surface runoff is medium to rapid. The plow layer must be cultivated under proper moisture conditions to prevent clodding or crusting. The root zone is moderately deep. Shrink-swell potential is moderate. The root zone and depth to soft shale bedrock range from 20 to 40 inches.

Included with this soil in mapping are small areas of soils that have slopes of more than 12 percent. Also included are small areas of Trappist, Tilsit, and Shelocta soils.

This Lenberg soil is used mainly for hay, pasture, and woodland.

This soil is suited only to occasional cultivation. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, and annual lespedeza are adapted species.

This soil is suited to chestnut oak, white oak, shortleaf pine, and Virginia pine. The main concern in woodland management is limited use of equipment because of the clayey subsoil.

This soil is poorly suited to most urban uses. Moderate depth to bedrock, slow permeability, steepness of slope, and the clayey subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 4c.

LeD—Lenberg silt loam, 12 to 20 percent slopes, eroded. This moderately steep, clayey soil is moderately deep and well drained. It is on narrow ridges in the southern part of the county. Slopes are short, smooth, and convex. The mapped areas are 5 to 100 acres.

Typically, the surface layer is brown silt loam about 3 inches thick. The subsoil is silty clay loam. The upper part of the subsoil is yellowish brown and strong brown with light yellowish brown mottles. The lower part, to a depth of 28 inches, is yellowish red and mottled dark yellowish brown and light olive gray. The substratum is mottled dark yellowish brown and light brownish gray shaly silty clay. Soft shale is at a depth of 33 inches.

This Lenberg soil is low in natural fertility and organic matter content. This soil is strongly acid or very strongly acid throughout. The available water capacity is moderate, permeability is moderately slow, and surface runoff is rapid. The plow layer must be cultivated under proper moisture conditions to prevent clodding or crusting. Shrink-swell potential is moderate. The root zone and depth to soft shale bedrock range from 20 to 40 inches.

Included with this soil in mapping are small areas of soils that have slopes of more than 20 percent or less than 12 percent. Also included are small areas of Shelocta soils and small areas of soils that are less than 20 inches deep to shale bedrock.

This Lenberg soil is used mainly for woodland, but some areas are used for pasture and hay.

This soil is poorly suited to cultivated crops. The erosion hazard is very severe if the plant cover is removed. This soil can be cultivated occasionally if erosion control practices are used. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, and annual lespedeza are adapted species. Preparing a seedbed is difficult because of the very severe erosion hazard on moderately steep slopes and limited use of equipment.

This soil is suited to shortleaf pine, Virginia pine, white oak, and chestnut oak. The main concerns in management of woodland are the erosion hazard and limited use of equipment because of the clayey subsoil.

This soil is poorly suited for most urban uses. Moderate depth to bedrock, slow permeability, the clayey subsoil, and steepness of slope are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IVe, and in woodland suitability group 4c.

LnF—Lenberg-Shelocta complex, 20 to 50 percent slopes, eroded. This map unit consists of moderately deep Lenberg soil and deep Shelocta soil. The areas of these soils are so intermingled that they could not be separated at the scale selected for mapping. These well drained soils are on steep hillsides and colluvial toe slopes. The mapped areas are about 150 to 1,500 feet wide and are about 10 to more than 200 acres.

Lenberg soil makes up about 60 percent of this map unit. Typically, the surface layer is brown silt loam about

3 inches thick. The subsoil is silty clay loam. It is yellowish brown to a depth of 7 inches and strong brown with light yellowish brown mottles to a depth of 14 inches. The lower part of the subsoil, to a depth of 20 inches, is yellowish red with light brownish gray mottles, and it is mottled dark yellowish brown and light olive gray to a depth of 28 inches. The substratum is mottled dark yellowish brown and light brownish gray very shaly silty clay loam. Soft shale is at a depth of 33 inches.

This Lenberg soil is low in natural fertility and organic matter content. This soil is strongly acid or very strongly acid throughout. The available water capacity is moderate, permeability is moderately slow, and surface runoff is rapid. Shrink-swell potential is moderate. The root zone and depth to soft shale bedrock ranges from 20 to 40 inches.

Shelocta soil makes up about 26 percent of this map unit. Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is light yellowish brown, yellowish brown, and strong brown silt loam to a depth of 28 inches; strong brown channery silty clay loam that has brown mottles to a depth of 52 inches; and yellowish brown channery silty clay loam that has brown and gray mottles to a depth of 65 inches.

This Shelocta soil is medium in natural fertility and low to moderate in organic matter content. This soil is strongly acid or very strongly acid throughout. The available water capacity is high, permeability is moderate, and surface runoff is medium rapid. The root zone is deep.

Included with this complex in mapping are small areas of soils that have slopes of more than 50 percent or less than 20 percent; soils similar to Shelocta soil except they are moderately deep; shallow, clayey soils; and soils that are moderately well drained. The included soils make up about 14 percent of this map unit.

Most areas of this complex are used for woodland, but a few areas are in permanent pasture.

This complex is suited to woodland. Potential productivity is moderate for Lenberg soil and high to moderately high for Shelocta soil. Trees that are suited to this complex on north aspects are white oak and shortleaf pine; also eastern white pine, yellow-poplar, white ash, northern red oak, and black walnut are suited on north slopes of Shelocta soil. For south slopes, shortleaf pine, and white oak are suited.

Most areas of this complex are not suited to cultivated crops, hay, pasture, and urban uses. Some areas that have slopes of less than 30 percent are suited to permanent pasture. Difficulty using equipment on steep and very steep slope and the very severe erosion hazard are the main limitations.

This complex is in capability subclass VIIe. Lenberg soil is in woodland suitability group 4c. Shelocta soil is in woodland suitability group 2r on north aspects and 3r on south aspects.

LoB—Lowell silt loam, 2 to 6 percent slopes. This gently sloping, clayey soil is deep and well drained. It is on upland ridges. Slopes are smooth and convex. The mapped areas are 5 to 50 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil is yellowish brown silty clay loam to a depth of 14 inches, yellowish brown clay to a depth of 35 inches, and light olive brown clay to a depth of 50 inches. Limestone bedrock is at a depth of 50 inches.

This Lowell soil is medium in natural fertility and low in organic matter content. This soil is slightly acid to very strongly acid in the surface layer and the upper part of the subsoil. It is strongly acid to mildly alkaline in the lower part of the subsoil. The available water capacity is high, permeability is moderately slow, and surface runoff is medium. The plow layer is easy to till except in small eroded spots. The root zone is deep. Shrink-swell potential is moderate.

Included with this soil in mapping are small areas of Shelbyville, Faywood, Nicholson, and Aaron soils. Also included are areas of soils that have slopes of more than 6 percent.

This Lowell soil is used mainly for hay, pasture, burley tobacco, and corn.

This soil is well suited to cultivated crops, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay (fig. 12). Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, alfalfa, smooth bromegrass, and annual lespedeza are adapted species.

This soil is well suited to northern red oak, white oak, and white ash. The main concern in management of woodland is plant competition.

This soil is suited to most urban uses. It has severe limitations if used for septic tank absorption fields or trench sanitary landfills. Moderately slow permeability, depth to bedrock, and the clayey subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 2c.

LoC—Lowell silt loam, 6 to 12 percent slopes. This sloping, clayey soil is deep and well drained. It is on narrow upland ridges. Slopes are short, smooth, and convex. The mapped areas are 5 to 50 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil is yellowish brown silty clay to a depth of 14 inches, yellowish brown clay to a depth of

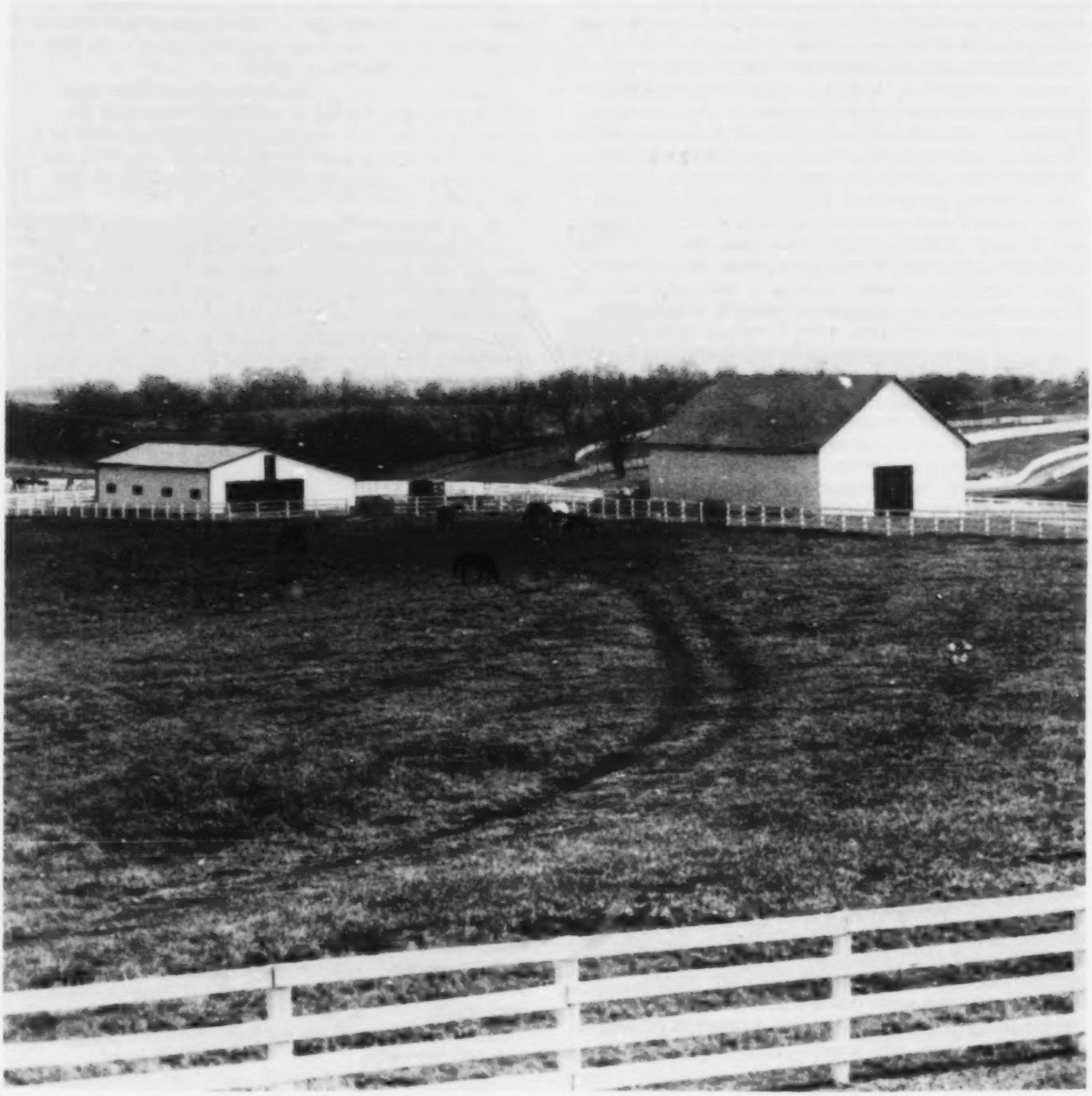


Figure 12.—These horses are grazing on an area of Lowell silt loam, 2 to 6 percent slopes.

35 inches, and light olive brown clay to a depth of 50 inches. Limestone bedrock is at a depth of 50 inches.

This Lowell soil is medium in natural fertility and low in organic matter content. This soil is slightly acid to very strongly acid in the surface layer and the upper part of the subsoil. It is strongly acid to mildly alkaline in the lower part of the subsoil. The available water capacity is high, permeability is moderately slow, and surface runoff is medium to rapid. The plow layer is easy to till except in small eroded spots. The root zone is deep. Shrink-swell potential is moderate.

Included with this soil in mapping are small areas of Shelbyville, Faywood, Aaron, and Nicholson soils. Also included are areas of soils that have slopes of more than 12 percent.

This Lowell soil is used mainly for pasture and hay, but some areas are used for burley tobacco and corn.

This soil is suited only to occasional cultivation. The hazard of erosion is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, and annual lespedeza are adapted species.

This soil is well suited to northern red oak, white oak, and white ash. The main concern in management of woodland is plant competition.

This soil is suited to urban uses. It has severe limitations for septic tank absorption fields, sewage lagoon areas, trench sanitary landfills, and small commercial buildings. Moderately slow permeability, steepness of slope, depth to bedrock, and the clayey subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 2c.

LoD—Lowell silt loam, 12 to 20 percent slopes. This moderately steep, clayey soil is deep and well drained. It is on upland hillsides. Slopes are short to long, smooth, and slightly concave or convex. The mapped areas are 5 to 30 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil is yellowish brown silty clay to a depth of 14 inches, yellowish brown clay to a depth of 35 inches, and light olive brown clay to a depth of 50 inches. Limestone bedrock is at a depth of 50 inches.

This Lowell soil is medium in natural fertility and low in organic matter content. This soil is slightly acid to very strongly acid in the surface layer and in the upper part of the subsoil. It is strongly acid to mildly alkaline in the lower part of the subsoil. The available water capacity is high, permeability is moderately slow, and surface runoff is rapid. The plow layer is easy to till except in small eroded spots. The root zone is deep. Shrink-swell potential is moderate.

Included with this soil in mapping are small areas of Shelbyville, Aaron, and Faywood soils. Also included are areas of soils that have slopes of more than 20 percent or less than 12 percent.

This Lowell soil is used mainly for pasture and hay.

This Lowell soil is poorly suited to cultivated crops. The erosion hazard is very severe if the plant cover is removed. This soil can be cultivated occasionally if erosion control practices are used. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, and annual lespedeza are adapted species. Preparing a seedbed is difficult because of the very severe erosion hazard on moderately steep slopes and limited use of equipment.

This soil is well suited to northern red oak, white ash, and white oak. The main concerns in management of woodland are the limited use of equipment because of moderately steep slopes, the erosion hazard, and plant competition.

This soil is poorly suited to most urban uses. Moderately slow permeability, slope, depth to bedrock, and the clayey subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IVe and in woodland suitability group 2c.

Me—Melvin silt loam, frequently flooded. This nearly level soil is deep and poorly drained. It is on flood plains in narrow valleys. Slopes are smooth, slightly concave, and range from 0 to 3 percent. The mapped areas are 5 to 40 acres.

Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsurface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is silt loam. It is grayish brown with light olive brown mottles to a depth of 26 inches and gray with yellowish brown mottles to a depth of 40 inches. The substratum is gray silt loam to a depth of 60 inches.

This Melvin soil is medium in natural fertility and moderate in organic matter content. This soil is slightly acid to mildly alkaline throughout. The available water capacity is high, permeability is moderate, and surface runoff is slow. A seasonal high water table is near the surface. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. The soil is subject to frequent flooding.

Included with this soil in mapping are small areas of somewhat poorly drained soils and poorly drained clayey soils. Also included are small areas of Otwell soils and areas of soils that are less than 40 inches deep to bedrock.

This Melvin soil is used mainly for hay, pasture, and woodland.

This soil is suited to corn and soybeans if adequately drained. Burley tobacco and fall-seeded small grain are poorly suited to this soil because of wetness. This soil can be continually cultivated if effectively drained and if the organic matter content and soil structure are maintained. Open ditch drainage in combination with grassed waterways or tile drainage systems can be used to remove excess water. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. Without proper drainage, crops will be damaged by wetness and use of equipment will be limited.

This soil is well suited to pin oak, sweetgum, and American sycamore. The main concerns in management of woodland are the limited use of equipment because of wetness, seedling mortality, and plant competition.

This soil is poorly suited to most urban uses because of frequent flooding and the seasonal high water table. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIw and in the woodland suitability group 1w.

Mo—Morehead silt loam, rarely flooded. This nearly level to gently sloping soil is deep and moderately well drained to somewhat poorly drained. It is on low stream terraces in the southern part of the county. Slopes are smooth, slightly concave or slightly convex, and range from 0 to 4 percent. The mapped areas are 5 to 100 acres.

Typically, the surface layer is light olive brown silt loam, about 6 inches thick, that has grayish and brownish mottles. The upper part of the subsoil, to a depth of 35 inches, is light olive brown silt loam that has brownish and grayish mottles. The lower part of the subsoil to a depth of 60 inches is light yellowish brown silty clay loam that has grayish and brownish mottles.

This Morehead soil is low in natural fertility and organic matter content. This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer has been limed. The available water capacity is high, permeability is moderate, and surface runoff is slow. It has a seasonal high water table at a depth of 6 to 18 inches. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. This soil is subject to rare flooding.

Included with this soil in mapping are small areas of Tyler, Stendal, and Peoga soils. Also included are areas of soils that are similar to Morehead soil except they have a gravelly or clayey subsoil.

This Morehead soil is used mainly for corn, soybeans, pasture and hay.

This soil is well suited to corn and soybeans if adequately drained. Burley tobacco is seldom grown on this soil because of wetness. This soil can be continually cultivated if effectively drained and if the organic matter content and soil structure are maintained. Tile drainage systems are effective in removing excess water. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. Crops are damaged by wetness in some years.

This soil is well suited to wetness-tolerant hay and pasture plants. Tall fescue, reed canarygrass, alsike clover, red clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is well suited to shortleaf pine, white oak, yellow-poplar, pin oak, white ash, sweetgum, and eastern white pine. The main concerns in management of woodland are plant competition and limited use of equipment because of wetness.

This soil is poorly suited to most urban uses because of a seasonal high water table and rare flooding. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIw and in woodland suitability group 2w.

NiB—Nicholson silt loam, 2 to 8 percent slopes. This gently sloping to sloping soil is deep and moderately well drained. It has a fragipan. It is on broad ridges above Faywood and Lowell soils. Slopes are smooth, slightly convex or slightly concave. The mapped areas are 5 to more than 100 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The upper part of the subsoil, to a depth of 27 inches, is yellowish brown silt loam. To a depth of 49 inches, it is a firm, compact, brittle fragipan of yellowish brown silt loam that has brownish mottles. The lower part of the subsoil to a depth of 60 inches is yellowish brown silty clay that has gray mottles.

The Nicholson soil is medium in natural fertility and moderate in organic matter content. This soil is slightly acid to very strongly acid through the fragipan, except in areas where the surface layer has been limed. It is strongly acid to mildly alkaline below the fragipan. The available water capacity is moderate, and surface runoff is medium. Permeability is moderate above the fragipan, but slow in the fragipan. A perched seasonal high water table is at a depth of 18 to 30 inches. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately deep. Shrink-swell potential below the fragipan is moderate.

Included with this soil in mapping are small areas of Shelbyville, Crider, Aaron, and Lowell soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 8 percent.

This Nicholson soil is used mainly for hay, pasture, burley tobacco, and corn.

This soil is well suited to cultivated crops commonly grown in the area, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay (see fig. 10). Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, alsike clover, and annual lespedeza are adapted species.

This soil is well suited to yellow-poplar, northern red oak, sweetgum, white oak, shortleaf pine, and white ash. The main concern in management of woodland is plant competition.

This soil is suited to urban uses. A perched seasonal high water table, slow permeability, and the clayey texture in the lower part of the subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 2o.

OtB—Otwell silt loam, 2 to 8 percent slopes. This gently sloping to sloping soil is deep and moderately well drained. It has a fragipan. It is on stream terraces along major streams. Slopes are smooth, slightly convex or slightly concave. The mapped areas are 5 to 70 acres.

Typically, the surface layer is light olive brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of 18 inches, is brownish yellow silt loam that has yellowish brown mottles. The subsoil, to a depth of 48 inches, is a firm, compact, brittle, fragipan of yellow and yellowish brown silt loam. The lower part of the subsoil to a depth of 65 inches is yellowish brown and light yellowish brown silty clay loam that has brownish gray mottles.

This Otwell soil is medium in natural fertility and low in organic matter content. This soil is strongly acid or very strongly acid through the fragipan, except in areas where the surface layer has been limed. It is strongly acid to moderately alkaline below the fragipan. The available water capacity is moderate, and surface runoff is medium. Permeability is moderate above the fragipan, but very slow in the fragipan. A perched seasonal high water table is at a depth of 24 to 36 inches. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately deep. Most areas of this soil do not flood.

Included with this soil in mapping are small areas of soils that have slopes of more than 8 percent or less than 2 percent. Also included are small areas of Elk soils, somewhat poorly drained soils, and small areas of soils that are subject to rare flooding.

This Otwell soil is used mainly for hay, pasture, corn, and burley tobacco.

This soil is well suited to cultivated crops, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, alsike clover, and annual lespedeza are adapted species.

This soil is suited to eastern white pine, white ash, white oak, and shortleaf pine. The main concerns in management of woodland are plant competition and seedling mortality.

This soil is suited to some urban uses. It has severe limitations if used for septic tank absorption fields, sewage lagoon areas, shallow excavations, and dwellings that have basements. A perched seasonal high water table, and slow permeability are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 3o.

Pe—Peoga silt loam, rarely flooded. This nearly level soil is deep and poorly drained. It is on low stream terraces in the southern part of the county. Slopes are smooth, slightly concave, and range from 0 to 3 percent. The mapped areas are 5 to 100 acres.

Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is silt loam or silty clay loam. It is light brownish gray with brownish yellow and yellowish brown mottles to a depth of 30 inches and light brownish gray and brownish yellow to a depth of 47 inches. The substratum is gray and brownish yellow silty clay loam to a depth of 65 inches.

This Peoga soil is low in natural fertility and organic matter content. The soil is medium acid to extremely acid, except in areas where the surface layer has been limed. The available water capacity is high, permeability is moderate to moderately slow, and surface runoff is very slow. A seasonal high water table is near the surface after heavy rains. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. This soil is subject to rare flooding.

Included with this soil in mapping are small areas of Tyler soils, Morehead soils, and small areas of soils similar to Peoga soil except they have a clayey subsoil. Also included are soils similar to Peoga soil except there is little increase in clay content in the subsoil.

This Peoga soil is used mainly for hay, pasture, and woodland.

This soil is suited to corn and soybeans if adequately drained. It is poorly suited to burley tobacco and fall-seeded small grain because of wetness. This soil can be continually cultivated if adequately drained and if the organic matter content and soil structure are maintained. Tile drainage systems are effective in removing excess water. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. Without proper drainage, crops will be damaged by wetness, and use of equipment will be limited.

This soil is suited to wetness-tolerant hay and pasture plants (fig. 13). Tall fescue, reed canarygrass, alsike clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is well suited to pin oak, red maple, white ash, baldcypress, sweetgum, and American sycamore. The main concerns in management for woodland are the limited use of equipment because of wetness, seedling mortality, and plant competition.

This soil is poorly suited for most urban uses because of a seasonal high water table and rare flooding. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIw and in woodland suitability group 2w.

Pt—Pits-Dumps complex. This complex is on upland ridges and hillsides. These are excavated areas that have been quarried for limestone. The mined limestone rocks were formed during the Ordivician and Mississippian periods. The mapped areas vary in shape, and they are 5 to 75 acres.

Pits make up about 50 percent of this complex. Pits are open excavations from which soil and the underlying material have been removed, exposing rock that

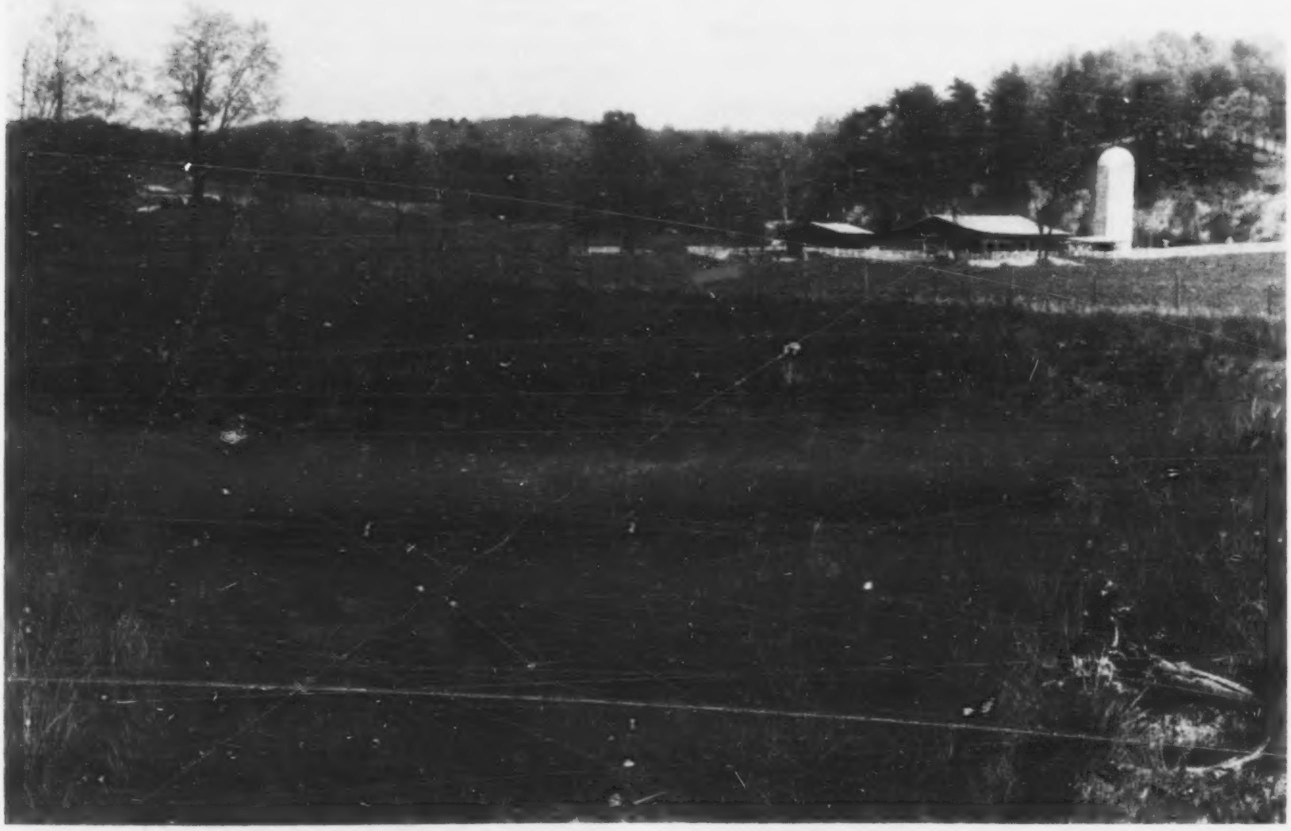


Figure 13.—Wetland plants dominate many cleared areas of Peoga silt loam, rarely flooded.

supports few or no plants. Typically, the areas have vertical limestone walls that are 10 to 100 feet deep. The bottom of this pit is limestone bedrock or smoothed waste rock. There were two active limestone quarries in Montgomery County when it was mapped.

Dumps make up about 35 percent of this complex. These dumps are nearly level to steep. They consist of waste rock from the mined limestone pit. The mapped areas have been smoothed or piled. These areas require major reclamation before they can support plants.

Included with this complex in mapping are small areas of Caneyville, Lowell, Faywood, and Cynthiana soils. Also included are areas of piled limestone that have been crushed and graded and areas of piled waste soil material. The inclusions make up about 15 percent of this map unit.

This complex is in capability subclass VIIIs and is not assigned to a woodland suitability group.

Ro—Robertsville silt loam. This nearly level soil is deep and poorly drained. It is on stream terraces and broad upland ridges. It has a fragipan. Slopes are smooth, slightly concave, and range from 0 to 3 percent. The mapped areas are 5 to 100 acres.

Typically, the surface layer is grayish brown silt loam about 7 inches thick. The subsoil is silt loam. It is light brownish gray with brown mottles to a depth of 28 inches. A firm, compact and brittle fragipan extends to a depth of 60 inches. It is light yellowish brown, olive yellow, gray, and yellowish brown with gray and brownish mottles.

This Robertsville soil is low in natural fertility and organic matter content. The soil is strongly acid to extremely acid throughout, except in areas where the surface layer has been limed. The available water capacity is moderate, and surface runoff is very slow. Permeability is moderate above the fragipan and slow in the fragipan. A seasonal high water table is near the surface. This soil has good tilth and can be worked throughout a wide range of moisture content. Depth of root zone and depth to the fragipan range from 15 to 30 inches.

Included with this soil in mapping are small areas of moderately well drained and somewhat poorly drained soils, soils that have more sand than Robertsville soil, clayey soils that do not have a fragipan, and areas of soils that are less than 60 inches deep to bedrock. Also included are small areas of soils that are subject to flooding.

This Robertsville soil is used for hay, pasture, and woodland.

This soil is suited to corn and soybeans if adequately drained. Burley tobacco is poorly suited to this soil because of wetness. This soil can be continually cultivated if effectively drained and if the organic matter content and soil structure are maintained. Open ditch drainage in combination with grassed waterways or tile drainage systems can be used to remove excess water. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. Without proper drainage, crops will be damaged by wetness, and use of equipment will be limited.

This soil is suited to wetness-tolerant hay and pasture plants. Tall fescue, reed canarygrass, alsike clover, red clover, Ladino clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is well suited to American sycamore, willow oak, pin oak, and sweetgum. The main concerns in management of woodland are the limited use of equipment because of wetness, seedling mortality, and plant competition.

This soil is poorly suited to most urban uses. A perched seasonal high water table and slow permeability are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IVw and in woodland suitability group 1w.

Sc—Sees silt loam, rarely flooded. This nearly level to gently sloping soil is deep and moderately well drained or somewhat poorly drained. It is on low stream terraces. Slopes are smooth, slightly concave or slightly convex, and range from 0 to 4 percent. The mapped areas are 5 to 50 acres.

Typically, the surface layer is very dark grayish brown silt loam about 6 inches thick. The subsurface layer is very dark grayish brown silty clay loam to a depth of 13 inches. The subsoil is very dark grayish brown silty clay loam to a depth of 22 inches, and to a depth of 60 inches, it is yellowish brown and dark grayish brown silty clay that has brownish and yellowish mottles.

This Sees soil is high in natural fertility and organic matter content. This soil is medium acid to moderately alkaline throughout. The available water capacity is high, permeability is slow, and surface runoff is slow to medium. It has a seasonal high water table at a depth of 12 to 24 inches after heavy rains. Cultivating the plow layer under proper moisture conditions helps to prevent clodding or crusting. The root zone is deep. Shrink-swell potential is moderate. This soil is subject to rare flooding.

Included with this soil in mapping are small areas of Boonesboro, Huntington, Shrouts, and Woolper soils. Also included are soils similar to Sees soil except they have less clay in the subsoil, poorly drained soils, small areas of soils that have slopes of more than 4 percent, and areas of soils that do not have a dark surface and are moderate in organic matter content and medium in natural fertility.

This Sees soil is used mainly for pasture, hay, and corn.

This soil is well suited to corn and soybeans if adequately drained. Burley tobacco is seldom grown on this soil because of wetness. This soil can be continually cultivated if effectively drained and if the organic matter content and soil structure are maintained. Open ditch drainage in combination with grassed waterways or tile drainage systems can be used to remove excess water. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. In some years, crops are damaged by wetness.

This soil is well suited to wetness tolerant hay and pasture plants. Tall fescue, reed canarygrass, alsike clover, red clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is well suited to yellow-poplar, white oak, and white ash. The main concerns in management of woodland are plant competition and limited use of equipment because of wetness.

This soil is poorly suited to most urban uses because of a seasonal high water table and rare flooding. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIw and in woodland suitability group 1w.

SeB—Shelbyville silt loam, 2 to 6 percent slopes. This gently sloping soil is deep and well drained. It is on fairly broad upland ridges (see fig. 1). Slopes are smooth and convex. The mapped areas are 5 to 100 acres.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsurface layer is brown silt loam to a depth of 18 inches. The subsoil, to a depth of 30 inches, is dark yellowish brown silty clay loam. To a depth of 55 inches, it is yellowish brown silty clay or clay that has brownish and yellowish mottles. The lower part of the subsoil to a depth of 65 inches is brownish yellow clay that has olive yellow mottles.

This Shelbyville soil is high in natural fertility and moderate in organic matter content. This soil is strongly acid to neutral in the surface and subsurface layers and the upper part of the subsoil. It is strongly acid to mildly alkaline in the lower part of the subsoil. The available water capacity is high, permeability is moderate to moderately slow, and surface runoff is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. Shrink-swell potential in the lower subsoil is moderate.

Included with this soil in mapping are small areas of Lowell, Crider, and Nicholson soils. Also included are areas of soils that have slopes of more than 6 percent.

This Shelbyville soil is used mainly for hay, pasture, burley tobacco, and corn.

This soil is well suited to cultivated crops, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, alfalfa, smooth bromegrass, and annual lespedeza are adapted grasses and legumes.

This soil is well suited to yellow-poplar, black walnut, northern red oak, white ash, white oak, eastern white pine, and shortleaf pine. The main concern in management of woodland is plant competition.

This soil is suited to most urban uses. It has severe limitations if used for septic tank absorption fields or local roads and streets. Moderately slow permeability and moderate shrink-swell in the lower part of the subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 2o.

SeC—Shelbyville silt loam, 6 to 12 percent slopes. This sloping soil is deep and well drained. It is on upland side slopes below less sloping areas of Shelbyville soil. Slopes are short, smooth, and slightly concave or slightly convex. The mapped areas are 5 to 30 acres.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsurface layer is brown silt loam to a depth of 18 inches. The subsoil, to a depth of 30 inches, is dark yellowish brown silty clay loam. To a depth of 55 inches, it is yellowish brown silty clay or clay that has brown and yellow mottles. The lower part of the subsoil to a depth of 65 inches is brownish yellow clay that has olive yellow mottles.

This Shelbyville soil is high in natural fertility and moderate in organic matter content. This soil is strongly acid to neutral in the surface and subsurface layers and in the upper part of the subsoil. It is strongly acid to mildly alkaline in the lower part of the subsoil. The available water capacity is high, permeability is moderate to moderately slow, and surface runoff is medium. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. Shrink-swell potential in the lower subsoil is moderate.

Included with this soil in mapping are small areas of Lowell, Crider, and Nicholson soils. Also included are small areas of soils that have slopes of more than 12 percent or less than 6 percent.

This Shelbyville soil is used mainly for hay and pasture, but a few areas are used for burley tobacco and corn.

This soil is suited only to occasional cultivation. The hazard of erosion is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, and annual lespedeza are adapted grasses and legumes.

This soil is well suited to yellow-poplar, northern red oak, black walnut, white ash, white oak, eastern white pine, and shortleaf pine. The main concern in management of woodland is plant competition.

This soil is suited to most urban uses. It has severe limitations if used for septic tank absorption fields, sewage lagoon areas, small commercial buildings, or local roads and streets. Moderately slow permeability, moderate shrink-swell in the lower subsoil, and steepness of slope are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 2o.

ShC—Shelocta silt loam, 6 to 15 percent slopes. This sloping soil is deep and well drained. It is on colluvial side slopes. Slopes are short, smooth, and slightly concave or slightly convex. The mapped areas are 5 to 30 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is light yellowish brown, yellowish brown, and strong brown silt loam to a depth of 28 inches, strong brown channery silty clay loam that has brown mottles to a depth of 52 inches, and yellowish brown channery silty clay loam that has brown and gray mottles to a depth of 65 inches.

This Shelocta soil is medium in natural fertility and low to moderate in organic matter content. This soil is strongly acid to very strongly acid throughout, except in areas where the surface layer has been limed. The available water capacity is high, permeability is moderate, and surface runoff is medium to rapid. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep.

Included with this soil in mapping are small areas of Tilsit and Trappist soils. Also included are small areas of soils that have slopes of more than 15 percent.

This Shelocta soil is used mainly for hay and pasture, but a few areas are used for corn and burley tobacco.

This soil is well suited to pasture and hay (see fig. 9). Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, alfalfa, and annual lespedeza are adapted species.

This soil is suited only to occasional cultivation. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to yellow-poplar, black walnut, northern red oak, eastern white pine, shortleaf pine, white ash, and white oak. The main concern in management of woodland is plant competition.

This soil is suited to most urban uses. It has severe limitations if used for sewage lagoons, trench sanitary landfills, small commercial buildings, or local roads and streets. Steepness of slope and depth to bedrock are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 2o.

SlF—Shelocta-Berks complex, 20 to 60 percent slopes. This map unit consists of deep and moderately deep soils on steep and very steep uplands. These well drained soils are in a regular repeating pattern, but they could not be separated at the scale selected for mapping. Shelocta soil is on long, steep mountainsides that are typically benched and that tend to be unstable. Berks soil is above and adjacent to Shelocta soil. Typical areas are very steep and very stony. Berks soil is more extensive on south aspects than on north aspects. This complex is adjacent to valley floors and extends 250 to 325 feet up the mountainside. Slopes range from 20 to 60 percent but average about 40 percent. Slopes on Shelocta soil vary from smooth to irregular and complex. Slopes on Berks soil are smooth and slightly convex. The mapped areas of this complex range from 50 to more than 1,000 acres.

Shelocta soil makes up about 70 percent of this map unit. Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is light yellowish brown, yellowish brown, and strong brown silt loam to a depth of 28 inches. To a depth of 52 inches, it is strong brown channery silty clay loam that has brownish mottles. The lower part of the subsoil to a depth of 65 inches is yellowish brown channery silty clay loam that has brownish and grayish mottles.

This Shelocta soil is medium in natural fertility and low to moderate in organic matter content. This soil is strongly acid or very strongly acid throughout. The available water capacity is high, permeability is moderate, and surface runoff is medium to rapid. The root zone is deep.

Berks soil makes up about 17 percent of this map unit. Typically, the surface is dark grayish brown channery silt loam about 5 inches thick. The subsoil is light yellowish brown and olive yellow very channery or channery silt loam to a depth of 24 inches and olive yellow very flaggy silt loam that has pale olive mottles to a depth of 37 inches. Hard siltstone bedrock is at a depth of 37 inches.

This Berks soil is low in natural fertility and organic matter content. It is slightly acid to extremely acid throughout. The available water capacity is low, permeability is moderate to moderately rapid, and surface runoff is rapid. The root zone is moderately deep. Depth to siltstone bedrock is 20 to 40 inches.

Included with this complex in mapping are small areas of Lenberg soil, areas of soils that have slopes of more than 60 percent, areas of Bledsoe soils, and areas where Berks soil is covered with deep colluvium. Included on some north aspects and in coves are soils similar to Shelocta soil except they have a dark surface layer and are more acid. Also included are a few areas of Shelocta soil that have hard bedrock at a depth of 48 to 60 inches. The included soils make up about 13 percent of this map unit.

Most areas of this complex are used as woodland.

Most areas of this complex are not suited to cultivated crops, hay, pasture, and urban uses. Some areas of this complex that have slopes of less than 30 percent are suited to permanent pasture. Steep, complex slopes and the very severe hazard of erosion if plant cover is removed are the main limitations.

This soil is suited to woodland. Potential productivity is high to moderately high for Shelocta soil and moderately high to moderate for Berks soil. Eastern white pine, yellow-poplar, black walnut, white oak, white ash, shortleaf pine, and northern red oak are preferred species for Shelocta soil on north aspects; eastern white pine, white oak, and shortleaf pine are preferred species for Shelocta soil on south aspects. Virginia pine, white oak, shortleaf pine, and chestnut oak are preferred species for Berks soil on north and south aspects; eastern white pine is a preferred species for Berks soil on north aspects. The main concerns of woodland management are the erosion hazard, limited use of equipment, seedling mortality, and plant competition.

The Shelocta soil has good potential for woodland wildlife habitat.

This complex is in capability subclass VIIe. Shelocta soil is in woodland suitability group 2r on north aspects and 3r on south aspects. Berks soil is in woodland suitability group 3f on north aspects and 4f on south aspects.

St—Stendal silt loam, frequently flooded. This nearly level soil is deep and somewhat poorly drained. It is on flood plains along major streams in the southern part of the county. Slopes are smooth, slightly concave, and range from 0 to 3 percent. The mapped areas are 5 to 50 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil, to a depth of 34 inches, is grayish brown silt loam that has gray and brown mottles. The substratum to a depth of 65 inches is grayish brown and olive gray silt loam that has gray and brown mottles.

This Stendal soil is medium in natural fertility and moderate in organic matter content. This soil is strongly acid to very strongly acid throughout, except in areas where the surface layer has been limed. The available water capacity is high, permeability is moderate, and surface runoff is very slow. A seasonal high water table is at a depth of 12 to 36 inches. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep. This soil is subject to frequent flooding.

Included with this soil in mapping are small areas of moderately well drained and poorly drained soils. Also included are small areas of Morehead soils.

This Stendal soil is used mainly for hay, pasture, corn, and soybeans.

This soil is well suited to corn and soybeans if adequately drained. Burley tobacco is seldom grown on this soil because of wetness. This soil can be continually cultivated if effectively drained and if the organic matter content and soil structure are maintained. Open ditch drainage in combination with grassed waterways or tile drainage systems can be used to remove excess water. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. Crops are damaged by wetness in some years.

This soil is well suited to wetness tolerant hay and pasture plants. Tall fescue, reed canarygrass, alsike clover, red clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is well suited to baldcypress, pin oak, eastern white pine, American sycamore, red maple, green ash, and sweetgum. The main concerns in management of woodland are plant competition and the limited use of equipment because of wetness.

This soil is poorly suited to most urban uses. Frequent flooding and a seasonal high water table are the main limitations. Low strength is a limitation for local roads and street.

This soil is in capability subclass IIw and in woodland suitability group 2w.

TlB—Tilsit silt loam, 0 to 6 percent slopes. This nearly level to gently sloping soil is deep and moderately well drained. It has a fragipan. It is on stream terraces and broad ridges in the Southern part of the county. Slopes are smooth and slightly concave or slightly convex. The mapped areas are 5 to 100 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil extends to shale bedrock. It is dark yellowish brown silt loam to a depth of 14 inches and yellowish brown silt loam to a depth of 23 inches. A firm, compact, brittle, mottled fragipan is at a depth of 23 inches. The fragipan is yellowish brown and light gray silt loam in the upper part and strong brown channery silty clay loam in the lower part. Shale bedrock is at a depth of 41 inches.

This Tilsit soil is low in natural fertility and organic matter content. This soil is strongly acid to extremely acid throughout. The available water capacity is

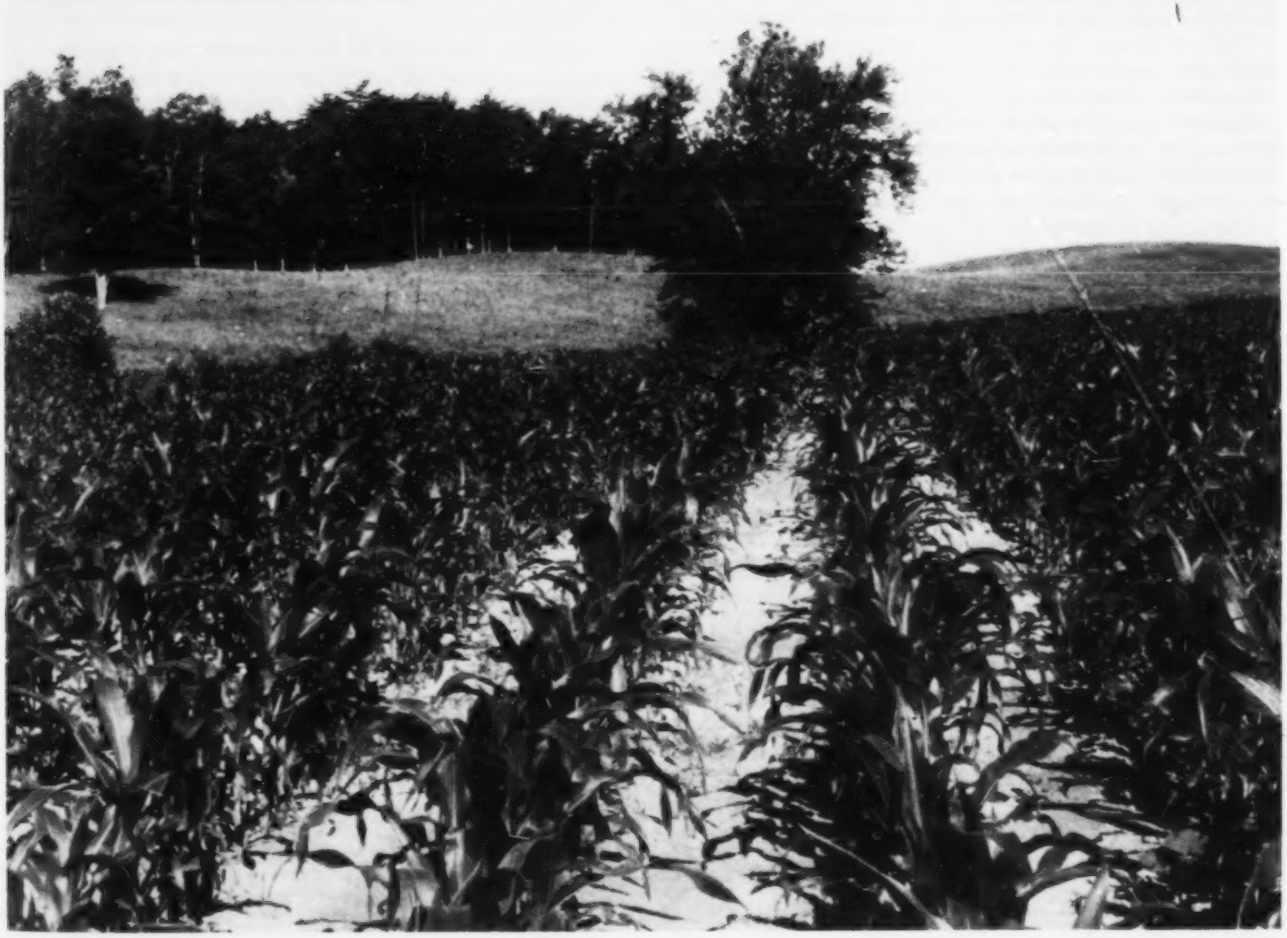


Figure 14.—Corn growing on Tilsit silt loam, 0 to 6 percent slopes. The more sloping areas in the background are Lenberg soils.

moderate, and surface runoff is slow to medium. Permeability is moderate above the fragipan, but slow in the fragipan. A seasonal high water table is at a depth of 18 to 30 inches. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately deep.

Included with this soil in mapping are small areas of Tyler, Beasley, and Trappist soils. Included are areas of soils that are less than 40 inches deep to shale bedrock and do not have a slowly permeable fragipan and soils similar to Tilsit soil except they have more sand. Also included are a few areas of soils that are subject to rare flooding.

This Tilsit soil is used mainly for pasture, hay, corn, and burley tobacco.

This soil is well suited to cultivated crops, such as corn (fig. 14), soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion. The perched seasonal high water table will damage some crops if not drained.

This soil is well suited to most pasture and hay plants. Kentucky bluegrass, orchardgrass, tall fescue, reed canarygrass, red clover (fig. 15), Ladino clover, alsike clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is suited to white oak, yellow-poplar, eastern white pine, and shortleaf pine. The main concern in management of woodland is plant competition.

This soil is poorly suited to most urban uses. Slow permeability, a perched seasonal high water table, and depth to bedrock, are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 3o.

TiC—Tilsit silt loam, 6 to 12 percent slopes. This sloping soil is deep and moderately well drained. It has a fragipan. This soil is on short side slopes, ridges, and stream terraces in the southern part of the county. Slopes are smooth, short, and slightly convex. The mapped areas are 5 to 50 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil extends to shale bedrock. It is dark yellowish brown silt loam to a depth of 14 inches and yellowish brown silt loam to a depth of 23 inches. A firm, compact, brittle, mottled fragipan is at a depth of 23 inches. The fragipan is yellowish brown and light gray silt loam in the upper part and strong brown channery silty clay loam in the lower part. Shale bedrock is at a depth of 41 inches.

This Tilsit soil is low in natural fertility and organic matter content. This soil is strongly acid to extremely acid throughout. The available water capacity is moderate, and surface runoff is medium. Permeability is moderate above the fragipan, but slow in the fragipan. A seasonal high water table is at a depth of 18 to 30 inches. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately deep.

Included with this soil in mapping are small areas of Shelocta and Lenberg soils and areas of soils similar to Tilsit soil except they have more sand. Also included are a few areas of soils that are subject to rare flooding.

This Tilsit soil is used mainly for hay and pasture, but a few areas are used for burley tobacco.

This soil is suited only to occasional cultivation. The erosion hazard is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes

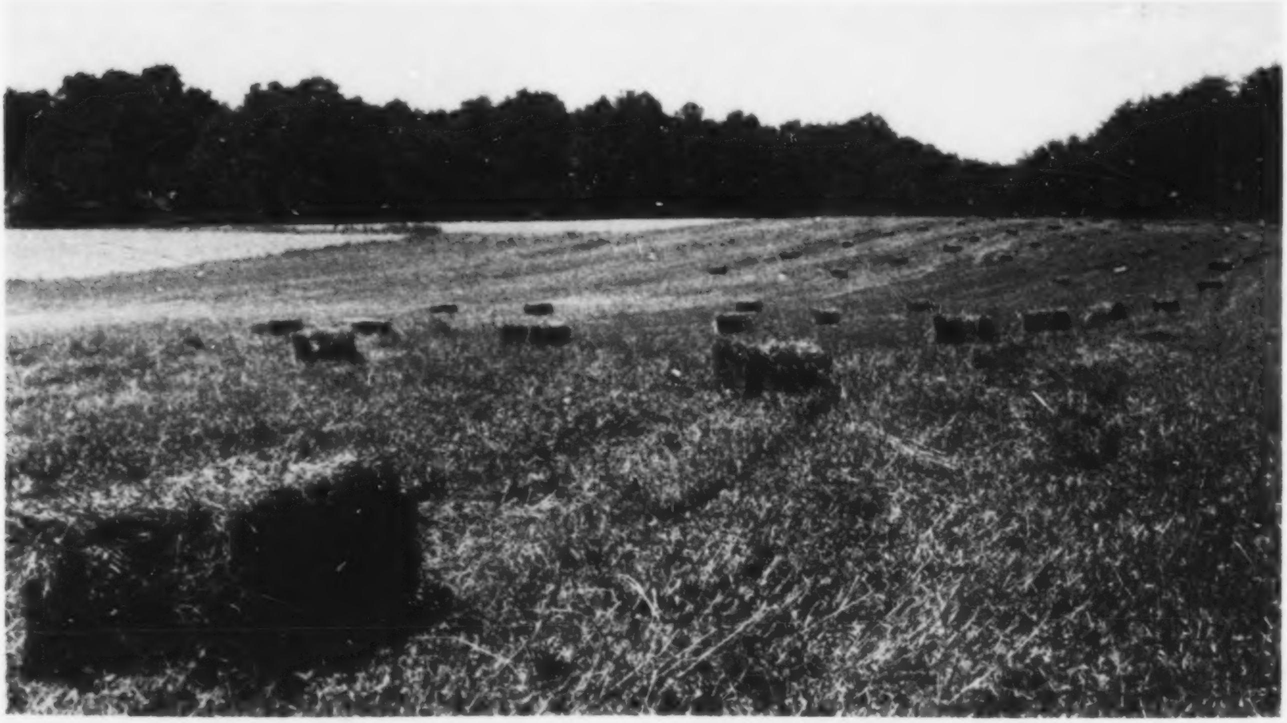


Figure 15.—Baled red clover hay on Tilsit silt loam, 0 to 6 percent slopes.

in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is suited to white oak, yellow-poplar, eastern white pine, and shortleaf pine. The main concern in management for woodland is plant competition.

This soil is poorly suited to most urban uses. Slow permeability, a perched seasonal high water table, depth to bedrock, and steepness of slope are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 3o.

TrC—Trappist silt loam, 6 to 12 percent slopes, eroded. This sloping, clayey soil is moderately deep and well drained. It is on narrow upland ridges and foot slopes. Slopes are short, smooth, and convex. The areas are 5 to 25 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil, to a depth of 20 inches, is strong brown silty clay loam or silty clay that has yellowish red mottles. It is strong brown shaly silty clay that has red and gray mottles to a depth of 26 inches. Soft shale bedrock is at a depth of 26 inches. Hard shale bedrock is at a depth of 55 inches.

This Trappist soil is low in natural fertility and organic matter content. This soil is strongly acid to extremely acid throughout. The available water capacity is moderate, permeability is moderately slow to slow, and surface runoff is medium to rapid. Cultivating the plow layer under proper moisture conditions helps to prevent clodding or crusting. The root zone is moderately deep. Shrink-swell potential is moderate. Shale bedrock is at a depth of 20 to 40 inches.

Included with this soil in mapping are small areas of Tilsit, Beasley, Shelocta, Colyer, and Lenberg soils. Also included are soils that are similar to Trappist soil but more than 40 inches deep to shale bedrock and soils that are similar to Trappist soil except they have less clay in the subsoil.

This Trappist soil is mainly used for hay, pasture, and woodland.

This soil is suited only to occasional cultivation. The hazard of erosion is severe if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, including grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, tall fescue, orchardgrass, red clover, Ladino clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is suited to Virginia pine, shortleaf pine, chestnut oak, and white oak. The main concerns in management of woodland are plant competition and limited use of equipment.

This soil is poorly suited to most urban uses. Moderate depth to bedrock, moderately slow permeability, and steepness of slope are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIe and in woodland suitability group 3c.

TsE—Trappist-Colyer-Shelocta complex, 12 to 30 percent slopes, eroded. This map unit consists of moderately deep Trappist soil, shallow Colyer soil, and deep Shelocta soil. The areas of these soils are so intermingled that they could not be separated at the scale selected for mapping. Typically, these well drained soils are on hillsides and colluvial toe slopes. The mapped areas are about 100 to 700 feet wide and are about 10 to more than 100 acres.

Trappist soil makes up about 35 percent of this map unit. Typically, the surface layer is brown silty clay loam about 6 inches thick. The subsoil, to a depth of 20 inches, is strong brown silty clay loam or silty clay that has yellowish red mottles. It is strong brown shaly silty clay that has red and gray mottles to a depth of 26 inches. Soft shale bedrock is at a depth of 26 inches. Hard shale bedrock is below 55 inches.

This Trappist soil is low in natural fertility and organic matter content. This soil is strongly acid to extremely acid throughout, except in areas where the surface layer has been limed. The available water capacity is moderate, permeability is moderately slow to slow, and surface runoff is rapid. The root zone is moderately deep. Shrink-swell potential is moderate. Soft shale bedrock is at a depth of 20 to 40 inches.

Colyer soil makes up about 27 percent of this map unit. Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil is strong brown very shaly silty clay to a depth of 10 inches. The substratum is strong brown extremely shaly silty clay that has grayish brown mottles. Hard shale bedrock is at a depth of 16 inches.

This Colyer soil is low in fertility and organic matter content. This soil is very strongly acid to extremely acid, except in areas where the surface layer has been limed. The available water capacity is low, permeability is slow, and surface runoff is rapid. The root zone is shallow. Hard shale bedrock is at a depth of 10 to 20 inches.

Shelocta soil makes up about 24 percent of this map unit. Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is light yellowish brown, yellowish brown, and strong brown silt loam to a depth of 28 inches, strong brown channery silty clay loam that has brown mottles to a depth of 52 inches, and is yellowish brown channery silty clay loam that has brown and gray mottles to a depth of 65 inches.

This Shelocta soil is medium in natural fertility and low to moderate in organic matter content. This soil is strongly acid to very strongly acid throughout. The available water capacity is high, permeability is moderate, and surface runoff is medium to rapid. The root zone is deep.

Included with this complex in mapping are small areas of Lenberg, Morehead, and Peoga soils; deep, clayey soils; moderately deep soils that have less clay; areas of soils that have slopes of more than 30 percent; and shale rock outcrops. Included are areas where the shale bedrock under Colyer soil is soft instead of hard. Also included are a few areas of soils that have hard bedrock at depth of 48 to 60 inches. The included soils make up about 14 percent of this map unit.

Most areas of this complex are used for hay, pasture, and woodland.

This complex is suited to permanent pasture, but poorly suited to cultivated crops and hay. The complex is limited because of the very severe erosion hazard and difficulty using equipment on moderately steep and steep slopes. Tall fescue, orchardgrass, and annual lespedeza are better suited to this soil than most other pasture plants.

This complex is suited to woodland. Potential productivity is moderately high for Trappist soil, moderate to low for Colyer soil, and high to moderately high for Shelocta soil. Preferred species for Trappist soil are shortleaf pine, chestnut oak, Virginia pine, and white oak. White oak, chestnut oak, and Virginia pine are preferred species for Colyer soil on north slopes, and Virginia pine is preferred on south slopes. For Shelocta soil on all aspects, eastern white pine, white oak, and shortleaf pine are preferred, and on north slopes yellow-poplar, white ash, northern red oak, and black walnut are also preferred. The main concerns in management of woodland are limited use of equipment, the erosion hazard, seedling mortality, and plant competition.

This complex has fair to good potential for woodland wildlife habitat.

This complex is poorly suited to urban uses. Moderately slow to slow permeability, depth to bedrock, and steepness of slopes are the main limitations. Low strength is a limitation for local roads and streets.

This complex is in capability subclass VIe. Trappist soil is in woodland suitability group 3c. Colyer soil is in woodland suitability group 4d on north aspects and 5d on south aspects. Shelocta soil is in woodland suitability group 2r on north aspects and 3r on south aspects.

Ty—Tyler silt loam. This nearly level soil is deep and somewhat poorly drained. It is on stream terraces and broad upland ridges. It has a fragipan. Slopes are smooth, slightly concave, and range from 0 to 3 percent. The mapped areas are 6 to 100 acres.

Typically, the surface layer is brown silt loam with grayish brown mottles about 9 inches thick. The subsoil is brownish yellow silt loam that has light brownish gray mottles to a depth of 17 inches. It is brown silt loam that has light brownish gray mottles to a depth of 24 inches. A firm, compact, brittle, fragipan is at a depth of 24 inches. The upper part of the fragipan, to a depth of 53 inches, is light brownish gray silt loam that has brown mottles. The lower part to a depth of 67 inches is yellowish brown silty clay loam that has light brownish gray mottles.

This Tyler soil is low in natural fertility and organic matter content. This soil is strongly acid to extremely acid throughout, except in areas where the surface layer has been limed. The available water capacity is moderate, and surface runoff is slow. Permeability is moderate to moderately slow above the fragipan and slow in the fragipan. A seasonal high water table is at a depth of 6 to 24 inches. This soil has good tilth and can be worked through a wide range of moisture content. The root zone is moderately deep.

Included with this soil in mapping are small areas of moderately well drained and poorly drained soils, and small areas of Peoga soil. Also included are a few areas of soils that are subject to rare flooding.

This Tyler soil is used mainly for hay, pasture, and woodland.

This soil is suited to corn and soybeans if adequately drained. Burley tobacco is poorly suited to this soil because of wetness. This soil can be continually cultivated if effectively drained and if the organic matter content and soil structure are maintained. Open ditch drainage in combination with grassed waterways or tile drainage systems can be used to remove excess water. Conservation tillage, returning crop residue to the soil, use of cover crops, including grasses and legumes in the cropping system, and use of green manure crops help to maintain desirable soil structure and organic matter content. Without proper drainage, crops will be damaged by wetness and use of equipment will be limited.

This soil is suited to wetness tolerant hay and pasture plants. Tall fescue, reed canarygrass, alsike clover, red clover, Ladino clover, and annual lespedeza are better suited to this soil than most other hay and pasture plants.

This soil is well suited to white ash, eastern white pine, yellow-poplar, and American sycamore. The main concerns in management of woodland are limited use of equipment because of wetness, seedling mortality, and plant competition.

This soil is poorly suited to most urban uses. A perched seasonal high water table and slow permeability are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIIw and in woodland suitability group 2d.

WoB—Woolper silty clay loam, 2 to 8 percent slopes. This gently sloping to sloping, clayey soil is deep and well drained. It is on colluvial foot slopes and stream terraces. Slopes are smooth and slightly convex. The mapped areas are 5 to 25 acres.

Typically, the surface layer is dark brown silty clay loam about 10 inches thick. The subsoil is silty clay. It is dark brown to a depth of 23 inches and dark yellowish brown to a depth of 53 inches. The substratum, to a depth of 65 inches, is dark yellowish brown silty clay that has light yellowish brown and yellowish brown mottles.

This Woolper soil is high in natural fertility and organic matter content. This soil is slightly acid to mildly alkaline throughout. The available water capacity is high, permeability is moderately slow to slow, and surface runoff is medium. Cultivation at the proper moisture conditions help to prevent clodding or crusting. The root zone is deep. Shrink-swell potential is moderate.

Included with this soil in mapping are small areas of Boonesboro, Sees, Otwell, and Elk soils. Included are small areas of soils that have slopes of more than 8 percent, and small areas that do not have a mollic epipedon. Also included are small areas of soils that are subject to rare flooding.

This Woolper soil is used mainly for hay, pasture, burley tobacco, and corn.

This soil is well suited to cultivated crops, such as corn, soybeans, tobacco, and small grain. The erosion hazard is moderate if this soil is cultivated. Contour farming, conservation tillage, contour stripcropping, use of green manure crops, grasses and legumes in the cropping system, use of cover crops, returning crop residue to the soil, no-till planting, and grassed waterways help to reduce runoff and control erosion.

This soil is well suited to pasture and hay. Kentucky bluegrass, orchardgrass, tall fescue, red clover, Ladino clover, alfalfa, smooth bromegrass, and annual lespedeza are adapted species.

This soil is well suited to northern red oak, yellow-poplar, white ash, white oak, and eastern white pine. The main concerns in management of woodland are plant competition and limited use of equipment because of the clayey subsoil.

This soil is suited to most urban uses. It has severe limitations for septic tank absorption fields and trench sanitary landfills. Moderately slow to slow permeability and the clayey subsoil are the main limitations. Low strength is a limitation for local roads and streets.

This soil is in capability subclass IIe and in woodland suitability group 2c.

Prime Farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in Montgomery County are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or built-up land and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water control structures.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 6 percent.

About 32,420 acres or 24.8 percent of Montgomery County is prime farmland. Areas of prime farmland are scattered throughout the county. Most areas are in General Soil Map Units 1, 2, 3, and 4.

A recent trend in land use has been the conversion of some prime farmlands to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, difficult to cultivate, and usually less productive than prime farmland.

The following map units, or soils, make up prime farmland in Montgomery county. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Soils that have limitations, such as a high water table or flooding, may qualify as prime farmland if these limitations are overcome by such measures as drainage or flood control. In the following list, the measures needed to overcome the limitations of a map unit, if any, are shown in parentheses after the map unit name. Onsite evaluation is necessary to determine if the limitations have been overcome by the corrective measures.

AaB	Aaron silt loam, 2 to 6 percent slopes
BaB	Beasley silt loam, 2 to 6 percent slopes
CrB	Crider silt loam, 2 to 6 percent slopes
Cu	Cuba silt loam, occasionally flooded
ElB	Elk silt loam, 2 to 6 percent slopes
Hu	Huntington silt loam, occasionally flooded
LoB	Lowell silt loam, 2 to 6 percent slopes
Me	Melvin silt loam, frequently flooded (where drained and where flooding during the growing season is less than once in 2 years)
Mo	Morehead silt loam, rarely flooded
NiB	Nicholson silt loam, 2 to 8 percent slopes
OtB	Otwell silt loam, 2 to 8 percent slopes
Pe	Peoga silt loam, rarely flooded (where drained)
Sc	Sees silt loam, rarely flooded
SeB	Shelbyville silt loam, 2 to 6 percent slopes
St	Stendal silt loam, frequently flooded (where drained and where flooding during the growing season is less than once in 2 years)
TiB	Tilsit silt loam, 0 to 6 percent slopes
Ty	Tyler silt loam (where drained)
WoB	Woolper silty clay loam, 2 to 8 percent slopes

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Kurt Mason, district conservationist, Soil Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

In 1978, about 107,279 acres in Montgomery County was used for crops and pasture. Of this, 66,494 acres was used for pasture; 32,174 acres for hay; and 8,611 acres for cultivated crops, mainly corn and tobacco *(12)*.

Soil erosion is a primary concern in management of the soils in Montgomery County. Soils that have slopes of more than 2 percent are susceptible to excessive erosion if cultivated. Sheet and rill erosion strips the surface layer of organic matter and plant nutrients, and subsequently reduces soil micro-organisms. Loss of the surface layer is especially critical on soils that have restricted root zones. Soils that have a clayey subsoil, that are shallow to bedrock, or that have a fragipan have a restricted root zone.

Some of the harmful effects of soil erosion are poor tilth, a decrease of water infiltration into the soil, an increase of water runoff, a decrease in soil fertility, an increase in production cost, a decrease in crop yields, and a decrease in the esthetic value. Because soil erosion is so damaging, a cropping system and other erosion control practices should be used to keep the loss of soil to an acceptable level. Contour farming, conservation tillage, stripcropping, rotating grasses and legumes in the cropping system, managing crop residue, use of green manure crops, cover crops, grassed waterways, diversions, and terraces are some practices that help to control erosion and maintain the present soil base. The local office of the Soil Conservation Service can provide technical assistance in applying these and other conservation practices.

Organic matter must be maintained to achieve optimum crop production. Organic matter is an important source of nitrogen for crops. It also helps increase water infiltration into the soil, reduces surface crusting, promotes good tilth, and provides a suitable environment for much needed micro-and macro-organisms. The organic matter content can be maintained by controlling erosion, adding barnyard manure, managing crop residue through conservation tillage, use of green manure crops, cover crops, and including grasses and legumes in the cropping system. Most of the soils in Montgomery County are low to medium in organic matter content.

Soil fertility in most soils in Montgomery County is low to medium. Natural soil fertility is directly related to the amount of organic matter (humus) present in the soil. Maintenance of the organic matter content is essential to maintain or increase natural soil fertility. Different plants require different soil pH values and nutrient requirements for optimum growth. Additions of lime and fertilizer should be based on the results of soil tests and the need of the specific crop. The University of Kentucky Cooperative Extension Service can help determine the kind and amount of lime and fertilizer needed.

Soil tilth is an important factor in seed germination, root penetration, and permeability. Roots penetrate and shoots emerge more easily in soils that have good tilth. Most soils in Montgomery County have good tilth. The soils have granular structure, are friable, and porous. Excessive tillage along with intense rainfall breaks down the granular structure and causes a crust to form on the surface. Once the crust forms, water runoff increases, and the ability of the soil to provide the proper combination of air and water to plants is hindered. Growing grasses and legumes, maintaining the organic matter content, and the use of reduced tillage practices help to maintain good tilth.

Artificial drainage of wet soils is a management concern in many parts of Montgomery County. Without proper drainage, wetness will damage many cultivated crops. When excess water is removed, the soil becomes better aerated, which increases essential bacterial action to manufacture plant food. Soils that are artificially drained warm up sooner in the spring. This lengthens the growing season and provides better conditions for seed germination and root penetration. Open ditch (surface) drainage and tile (subsurface) drainage are the most commonly used artificial drainage systems. Open ditches are usually cheaper to install than the tile system, but require more maintenance and are less effective. Both tile and open ditch drainage require suitable outlets. Information on drainage design for soils in Montgomery County is available at the local office of the Soil Conservation Service.

Cultivated crops commonly grown in Montgomery County are corn, burley tobacco, and soybeans. Wheat, barley, and rye are grown mainly for cover crops. Specialty crops, such as vegetables and fruit crops, are not commonly grown in Montgomery County. Latest information and recommendations for cultivated crops or specialty crops is available from local offices of the University of Kentucky Cooperative Extension Service and the Soil Conservation Service.

Pasture and hay management is required to produce the quantity and quality of forages needed for a successful livestock program. A successful forage program can furnish up to 78 percent of feed for beef cattle and 66 percent for dairy cattle *(4)*.

A basic knowledge of soils and plants is necessary to have a productive forage program. The soils in Montgomery County vary in depth to rock or limiting layers, internal drainage, ability to supply moisture, and many other properties. Grasses and legumes vary widely in their ability to persist and produce on different soils.

Plant species should be planted in compatible soils to get the greatest return and maximum soil and water conservation. Level to gently sloping, deep, well drained soil is best suited to a high producing crop, such as alfalfa. Sod forming grasses, such as tall fescue or bluegrass, should be planted on steeper soils to minimize soil erosion. Alfalfa could be used where the soils are at least 2 feet deep and well drained. On soils less than 2 feet deep or not well drained, clover and grasses should be used.

Plants should be adapted not only to the soil but also to the intended use. Some of the more frequently used grasses and legumes for pasture are tall fescue, Kentucky bluegrass, orchardgrass, ladino clover, white clover, and Korean lespedeza. Grasses and legumes established primarily for hay crops are tall fescue, orchardgrass, timothy, red clover, and alfalfa. Legumes generally produce higher quality feed than grasses, resulting in higher animal performance. They should be used to the maximum extent possible.

Renovation is a good way to increase yields of pasture and hay (see fig. 11). Renovation is the improvement of pasture and hay fields by partial destruction of the sod, plus liming, fertilizing, and seeding to re-establish desirable forage plants.

Some important steps in successful renovation and management are *(5)*—

- Graze or mow close before disking or disturbing the sod.
- Disturb 40 to 60 percent of the grass for sowing clovers and 80 to 100 percent for alfalfa. A disk, field cultivator, or field tiller can be used.
- Take soil tests and apply the needed lime, phosphate, and potash. Do not use nitrogen when renovating old grass fields as it increases grass competition to the legume seedlings.
- Prepare a smooth, firm seedbed and distribute the seed evenly over the area, covering the seed about 1/8 to 1/4 inch deep to assure a good seed to soil contact.
- Seed an adapted variety that has a high percent germination and inoculate legumes with the proper nitrogen-fixing bacteria.
- Seed fescue, bluegrass, timothy, orchard grass, ryegrass, and small grain for forage late in summer or early in fall. Alfalfa, red clover, white clover, and lespedeza are most successfully seeded in the spring.

- Keep renovated fields grazed short until livestock start biting on the young legumes, then remove livestock and allow legumes to become established.
- Control grazing and leave 2 to 3 inches of top growth on established grass-legume mixtures.
- Mow pastures as needed to remove grass seed heads and to control weeds and woody vegetation.
- Topdress annually with phosphate and potash according to the soil test and add lime to maintain soil pH for the legume that is being grown.
- Check renovated fields for insect damage or disease.

Weed and brush control are essential elements in good pasture management. Mowing pastures at least once each year before weed seed heads are formed helps to control undesirable weed and brush species and allows more grazeable grasses to be utilized.

Overgrazing of pasture is a long-standing problem in pasture management. Some of the chief causes of overgrazing are minimum management of forages, adequate shade not distributed over the grazeable area, water supplies for livestock spread out over too great a distance, and overstocking of livestock. Proper distribution of water and shade for grazing livestock is essential in maintaining adequate forage and protecting the soil from erosion. A combination of the kind of soil and forage management will determine the amount of forage produced and the number of livestock which can properly be grazed. For example, under a high level of management, a 10 acre field of tall fescue and annual lespedeza grown on Faywood silt loam could produce about 40 tons of grazeable green grass, enough to carry 8.3 beef cows with calves through 8 months of continuous grazing. Under the same conditions, the same forage grown on Cynthiana silt loam could grow about 20 tons of grazeable grass, enough to carry 4.1 cows with calves for 8 months on a continuous grazing system. Local personnel of the Soil Conservation Service can figure proper stocking rates for different types of livestock on different tracts of land.

Continuous grazing and rotation grazing are the two most widely used grazing systems in the county. Under the continuous grazing system, a high level of management is required because livestock graze only a specific area throughout the grazing season. Livestock may tend to overgraze sections that are close to water and shade. Livestock will also tend to graze heavier on specific areas that have better forages. Under the continuous grazing system, livestock usually have the run of large acreages.

Under the rotation grazing system, livestock graze two or more pastures in a regular, alternating sequence, allowing each pasture to recover between grazing. Under the rotation system, better use is made of available forages on a per acre basis. Grazing areas under this system are usually of smaller acreages, and water facilities are generally located in every grazing field. To have sufficient quality forage available for each grazing period, a high level of management is required. Given the same growing conditions and acreage, more livestock can be grazed on a rotation grazing system than a continuous system.

For additional information on pasture and hay management, contact the local office of the Soil Conservation Service or the Kentucky Cooperative Extension Service.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major, and generally expensive, landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w*, *s*, or *c*.

Woodland Management and Productivity

Charles A Foster, staff forester, Soil Conservation Service, helped to prepare this section.

Montgomery County is along the boundary between the Mixed Forest and Western Forest regions of the state. Commercial forest land occupies 27,700 acres, or 21 percent of the total land area, mostly in the southeastern part of the county *(8)*. The oak-hickory forest type, the most extensive, covers 50 percent of the forest acreage; the oak-pine type covers 19 percent.

Forested tracts in the survey area are primarily unmanaged, small private holdings averaging 18 acres. Most forested sites have the capability of growing 50 cubic feet or more of wood per acre per year, but actual growth is about 20 cubic feet. Obstacles to management are the lack of interest and knowledge of sound forestry practices. Forested tracts are not well stocked with desirable high quality trees, and many tracts are owned less than 10 years.

Tree growth, stocking, and quality can be improved with proper management. This involves removal of low-quality trees in fully stocked and understocked stands of all sizes and regeneration of sawtimber stands after harvest. Soil surveys are useful management tools to identify Kentucky's most productive forest sites, soil limitations for management, and preferred tree species to plant.

The wood industry in Montgomery County consists primarily of two commercial sawmills and one wood treatment plant. Products from these mills include rough lumber, dimension stock, posts, fuel wood, cross ties, timbers and pressure treated posts, fencing, and lumber. Several mills in adjoining counties also buy logs and standing trees from Montgomery County.

Table 7 can be used by forest land owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol (woodland suitability) for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: x, w, d, c, f, and r.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in a well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *plant competition* indicate the degree to which undesirable plants are expected to invade where there are openings in the tree canopy. The invading plants compete with native plants or planted seedlings. A rating of *slight* indicates little or no competition from other plants; *moderate* indicates that plant competition is expected to hinder the development of a fully stocked stand of desirable trees; *severe* indicates that plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed to control undesirable plants.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

Recreation

In table 8, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

William H. Casey, biologist, Soil Conservation Service, helped to prepare this section.

The wildlife population of Montgomery County is made up of an estimated 37 species of mammals, 47 species of reptiles and amphibians, and 108 species of breeding birds. Many of the more than 200 other kinds of birds that visit Kentucky each year can be found in this county.

The kinds of wildlife most important to man at present are those that furnish recreation, such as sport hunting, or are used for economic gain. In Montgomery County, the gray squirrel, fox squirrel, raccoon, mink, muskrat, white-tailed deer, cottontail rabbit, bobwhite quail, ruffed grouse, and mourning dove are important wildlife.

There is much overlap in the types of habitat required by these animals. The gray squirrel, fox squirrel, white-tailed deer, and ruffed grouse are generally classified as woodland wildlife. The cotton-tail rabbit, bob-white quail, and mourning dove are openland wildlife; and the ducks, geese, shorebirds, and those mammals, such as mink and muskrat, that spend much of their time in or about water are classified as wetland wildlife. Many nongame birds, such as the green heron and kingfisher, that feed on fish and other aquatic life are also in the wetland wildlife category.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, bluegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, and beggarweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial, wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations must be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to: evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, and soil reaction affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones, boulders, or organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 19.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 15.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area, or from nearby areas, and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severely corrosive environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 17 and the results of chemical analysis in table 18. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Kentucky Agricultural Experiment Station.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an oven-dry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(10)*.

Coarse materials—(2-75 mm fraction) weight estimates of the percentages of all materials less than 75 mm (3B1).

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).

Organic carbon—dichromate, ferric sulfate titration (6A1a).

Extractable cations—ammonium acetate pH 7.0, uncorrected; calcium (6N2), magnesium (6O2), sodium (6P2), potassium (6Q2).

Extractable acidity—barium chloride-triethanolamine I (6H1a).

Cation-exchange capacity—ammonium acetate, pH 7.0 (5A1a).

Cation-exchange capacity—sum of cations (5A3a).

Base saturation—ammonium acetate, pH 7.0 (5C1).

Base saturation—sum of cations, TEA, pH 8.2 (5C3).

Reaction (pH)—1:1 water dilution (8C1a).

Reaction (pH)—potassium chloride (8C1c).

Available phosphorus—Procedure (656) Kentucky Agricultural Experiment Station.

Field Sampling—site selection (1A1).

Field Sampling—soil sampling (1A2).

Laboratory Preparation—Standard (air dry) Material (1B1).

Particles less than Specified size; greater than 2 mm (2A2).

Particles less than 2 mm (2A1).

Data Sheet Symbols (2B).

Particles greater than 2 mm By Field or Laboratory Weighing (3B1a).

Extractable Bases (5Bla).

Exchangeable Acidity (H + A1) Method of Yuan Procedure 67-3.52, Part 2, Methods of Analysis, ASA, 1965.

Calcium Carbonate Equivalent—Procedure (236b) USDA Handbook 60, USDA Salinity Laboratory 1954 (6N7).

Engineering Index Test Data

Table 19 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by Soil Mechanics Lab, South National Technical Center, Fort Worth, Texas.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); Specific gravity (particle index)—T100 (AASHTO), D653 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(11)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*ud*, meaning udic moisture regime, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Hapludalfs.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual (9)*. Many of the technical terms used in the descriptions are defined in *Soil Taxonomy (11)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The location of each typical pedon is described in narrative form and by its coordinate grid values. Some of the pedons are in a quadrangle that has both north and south values. For these pedons, the phrase *north system* is used in the description to denote the system being used. Those pedons that are entirely within the north zone do not carry a qualifying phrase denoting the system.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Aaron Series

The Aaron series consists of deep, moderately well drained soils that have slow permeability. They formed in residuum from limestone interbedded with calcareous shale and siltstone. These soils are on narrow ridges. Slopes range from 2 to 12 percent.

Aaron soils are on similar landforms with Crider, Faywood, Lowell, and Nicholson soils. Crider, Faywood, and Lowell soils are well drained. Nicholson soils have a fragipan.

Typical pedon of Aaron silt loam, 2 to 6 percent slopes; on soil map sheet 4; about 0.75 mile west from the intersection of U.S. Highway 460 and Chiles Road at Sideview about 1,350 feet north of Chiles Road; east-west about 2,057,250 feet and north-south 222,900 feet by Kentucky coordinate grid values:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

B21t—8 to 17 inches; light olive brown (2.5Y 5/4) clay; moderate coarse and medium subangular blocky structure parting to weak fine angular blocky; very firm; common fine roots; common clay films; common dark brown (10YR 3/3) coatings; mildly alkaline; clear smooth boundary.

B22t—17 to 26 inches; light olive brown (2.5Y 5/4) clay; few fine faint grayish brown mottles; moderate medium subangular blocky structure parting to moderate fine angular blocky; very firm; few fine roots; common clay films; common distinct dark grayish brown (2.5Y 4/2) coatings; neutral; clear smooth boundary.

B23t—26 to 37 inches; light olive brown (2.5Y 5/6) clay; common fine distinct light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/6) mottles; weak and moderate medium subangular and angular blocky structure; very firm; few fine roots; common clay films; neutral; clear smooth boundary.

B3—37 to 45 inches; light olive brown (2.5Y 5/6) silty clay; many medium distinct light brownish gray (2.5Y 6/2) and common fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; common fine dark brown and black concretions; 5 percent flat fragments of siltstone and highly weathered shale as much as 6 inches long; neutral; gradual smooth boundary.

C—45 to 53 inches; light olive brown (2.5Y 5/5) and light olive gray (5Y 6/2) silty clay; very firm; common fine calcium carbonate concretions; 10 percent flat fragments of siltstone, limestone, and highly weathered shale as much as 6 inches long; mildly alkaline; abrupt smooth boundary.

R—53 inches; hard limestone bedrock interbedded with calcareous shale and siltstone.

Thickness of the solum ranges from 30 to 50 inches. Depth to bedrock ranges from 40 to 60 inches. Content of coarse fragments ranges from 0 to 14 percent in the B2t horizon and from 0 to 35 percent in the B3 and C horizons. The B2t horizon ranges from strongly acid to mildly alkaline. The B3 and C horizons range from medium acid to mildly alkaline.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. Texture is silt loam.

The B2t horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 4 through 8. Mottles have chroma of 2 through 8. Texture is silty clay loam, silty clay, or clay.

The B3 and C horizons have colors similar to those of the B2t horizon. Texture is silty clay, clay, or channery silty clay.

Beasley Series

The Beasley series consists of deep, well drained soils that have moderately slow permeability. They formed in residuum from dolomitic limestone and siltstone interbedded with soft, calcareous mudstone. These soils are on narrow ridges and hillsides. Slopes range from 2 to 35 percent.

Beasley soils are on similar landforms with Brassfield, Shrouts, Nicholson, and Crider soils. Brassfield and Shrouts soils are moderately deep. Nicholson soils have a fragipan. Crider soils have a fine-silty control section.

Typical pedon of Beasley silt loam, 6 to 12 percent slopes; on soil map sheet 14; about 1,825 feet northwest of the intersection of Kentucky Highway 11 and Camargo Road at Levee; east-west (north system) about 2,089,100 feet and north-south (north system) 172,400 feet by Kentucky coordinate grid values:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; common fine roots; medium acid; abrupt smooth boundary.

B21t—8 to 18 inches; strong brown (7.5YR 5/8) silty clay; moderate medium subangular blocky structure parting to moderate fine angular blocky; firm; common fine roots; many thin clay films; strongly acid; gradual smooth boundary.

B22t—18 to 30 inches; strong brown (7.5YR 5/8) silty clay; common fine faint yellowish brown mottles; moderate medium subangular blocky structure parting to moderate very fine angular blocky; very firm; few fine roots; many clay films; common fine black concretions; strongly acid; clear smooth boundary.

B3—30 to 36 inches; brownish yellow (10YR 6/8) silty clay; common fine distinct light brownish gray (2.5Y 6/2) mottles; weak coarse subangular blocky structure parting to weak medium subangular blocky; very firm; few fine roots; common thin clay films; medium acid; clear smooth boundary.

C1—36 to 47 inches; mixed, olive yellow (2.5Y 6/6) and greenish gray (5GY 6/1) silty clay; very firm; common soft black concretions; neutral; clear smooth boundary.

C2—47 to 52 inches; olive yellow (2.5Y 6/8) silty clay; common fine distinct greenish gray (5GY 6/1) mottles; horizon stratified with brownish yellow (10YR 6/8) silty clay loam; firm; common soft black concretions; mildly alkaline; clear smooth boundary.

Cr—52 to 60 inches; olive (5Y 5/6) calcareous shale and siltstone interbedded with hard dolomitic sandstone.

Thickness of the solum ranges from 20 to 40 inches. Depth to soft, calcareous bedrock ranges from 40 to 60 inches. Content of coarse fragments ranges from 0 to 10 percent in the solum and from 0 to 35 percent in the C horizon. The Ap and B2 horizons range from very strongly acid to neutral. The B3 horizon ranges from medium acid to moderately alkaline, and the C horizon ranges from neutral to moderately alkaline.

The Ap horizon has hue of 2.5Y or 10YR, value of 4 or 5, and chroma of 2 through 4. Texture is silt loam.

The B2 horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 through 8. In some pedons, the lower part of this horizon is mottled in shades of red, brown, yellow, and gray. Texture is silty clay or clay.

The B3 and C horizons have hue of 7.5YR through 5Y, value of 4 through 6, and chroma of 1 through 8. Texture is silty clay or clay.

Berks Series

The Berks series consists of moderately deep, well drained soils that have moderate and moderately rapid permeability. They formed in residuum from acid siltstone and shale. These soils are on steep side slopes. Slopes range from 35 to 65 percent.

Berks soils are on similar landforms with Shelocta and Bledsoe soils. Bledsoe and Shelocta soils are deep colluvial soils.

Typical pedon of Berks silt loam, from an area of Shelocta-Berks complex, 20 to 60 percent slopes; on soil map sheet 17; about 4.7 miles south of Jeffersonville, 0.5 mile southwest of Sid Calt Lake, about 71,700 feet north of the Montgomery-Powell County line; east-west (north system) about 2,113,700 feet and north-south (north system) 149,150 feet by Kentucky coordinate grid values:

A1—0 to 5 inches; dark grayish brown (2.5Y 4/2) channery silt loam; moderate fine granular structure; very friable; many fine and medium roots; 30 percent siltstone channery; very strongly acid; abrupt smooth boundary.

B1—5 to 10 inches; light yellowish brown (2.5Y 6/5) very channery silt loam; weak medium subangular blocky and weak medium granular structure; very friable; common fine and medium roots; common dark grayish brown (2.5Y 4/2) coatings; 40 percent siltstone channers; very strongly acid; clear wavy boundary.

B2—10 to 24 inches; mixed, olive yellow (2.5Y 6/6) and light yellowish brown (2.5Y 6/4) channery silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; 35 percent siltstone channers with some flagstones; very strongly acid; clear wavy boundary.

B3—24 to 37 inches; olive yellow (2.5Y 6/6) very flaggy silt loam; few fine faint pale olive (5Y 6/3) mottles; weak medium subangular blocky structure; friable; few fine roots; 55 percent flagstone and channers; very strongly acid; gradual wavy boundary.

R—37 inches; hard siltstone bedrock.

Thickness of the solum ranges from 18 to 40 inches. Depth to bedrock ranges from 20 to 40 inches. Content of coarse fragments ranges from 10 to 50 percent in the A horizon, from 15 to 75 percent in the B horizon, and from 35 to 90 percent in C horizons. The soil ranges from slightly acid to extremely acid throughout.

The A horizon has hue of 10YR, value of 2 through 5, and chroma of 1 through 4. Texture is channery silt loam.

The B horizon has hue of 5YR through 2.5Y, value of 4 through 6, and chroma of 3 through 8. Texture is silt loam, loam, or silty clay loam, or their channery or very channery analogs.

In some pedons, there is a C horizon that has the same color range and texture as the B horizon.

Bledsoe Series

The Bledsoe series consists of deep, well drained soils that have moderately slow to slow permeability. They formed in colluvium derived chiefly from limestone. These soils are on benched side slopes. Slopes range from 12 to 60 percent.

Bledsoe soils are on similar landforms with Shelocta soils. Shelocta soils are fine-loamy colluvial soils.

Typical pedon of Bledsoe silt loam, in an area of Bledsoe-Shelocta complex, 12 to 35 percent slopes; on soil map sheet 18; about 5.2 miles southeast of Jeffersonville; about 1 mile west (slightly north) of the intersection of the Montgomery, Menifee, and Powell County lines; east-west (north system) about 2,133,450 feet and north-south (north system) 154,350 feet by Kentucky coordinate grid values:

O1—1.5 to 0 inches; recent forest litter from hardwoods.

A1—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine, common medium, and common coarse roots; few sandstone and limestone channers; medium acid; clear smooth boundary.

B21t—8 to 14 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular and angular blocky structure; friable; common fine and medium roots; common clay films; few chert and sandstone fragments; slightly acid; clear smooth boundary.

B22t—14 to 26 inches; brown (7.5YR 5/4) silty clay; moderate medium subangular blocky structure parting to moderate fine angular blocky; firm; few fine and medium roots; continuous clay films; neutral; clear smooth boundary.

B23t—26 to 35 inches; strong brown (7.5 YR 5/6) silty clay; moderate medium angular blocky structure; very firm; few fine roots; strong brown (7.5YR 5/6) continuous clay films; few channery coarse fragments; medium acid; clear wavy boundary.

B24t—35 to 47 inches; yellowish brown (10YR 5/6) silty clay; moderate medium angular blocky structure parting to moderate fine angular blocky; very firm; few fine roots; many yellowish brown (10YR 5/6) clay films; few channery coarse fragments; neutral; gradual wavy boundary.

B25t—47 to 54 inches; strong brown (7.5YR 5/6) silty clay; common medium distinct pale olive (5Y 6/4) mottles; moderate medium subangular blocky structure parting to moderate fine angular blocky; very firm; common thin clay films; few channery coarse fragments; mildly alkaline; gradual wavy boundary.

IIB3—54 to 65 inches; olive (5Y 5/3) silty clay; common medium distinct light olive brown (2.5Y 5/4) and strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm; few fine roots; common thin clay films; neutral.

Thickness of the solum ranges from 40 to more than 80 inches. Depth to bedrock is greater than 60 inches. Content of coarse fragments ranges from 0 to 25 percent to a depth of 40 inches, and from 0 to 40 percent below a depth of 40 inches. The soil ranges from medium acid to mildly alkaline throughout.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 through 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 through 6. In some pedons below 35 inches, this horizon is mottled in shades of olive, brown, red, or gray. Texture is silty clay loam, silty clay, or clay with channery analogs.

The IIB3 horizon has hue of 7.5YR through 5Y, value of 4 or 5, and chroma of 3 through 6. In some pedons, this horizon is mottled in shades of olive, gray, and brown. Texture is silty clay, silty clay loam, or clay. In some pedons, there is a IIC horizon that has the same color range and textures as the IIB3 horizon.

Boonesboro Series

The Boonesboro series consists of moderately deep, well drained soils that have moderate to rapid permeability. They formed in alluvium washed from upland soils of limestone, siltstone, and shale origin. These soils are on flood plains in narrow valleys and are subject to frequent flooding, mainly in winter and spring. Slopes range from 0 to 3 percent.

Boonesboro soils are on similar landforms with Melvin, Huntington, Elk, Otwell, and Woolper soils. Melvin soils are poorly drained. Huntington and Elk soils are more than 60 inches deep to bedrock. Otwell soils have a fragipan. Woolper soils are deep and have more than 35 percent clay in the control section.

Typical pedon of Boonesboro silt loam, frequently flooded; on soil map sheet 12; about 4 miles southeast of Mount Sterling, 250 feet south of Kentucky Highway 713; east-west about 2,107,300 feet and north-south 193,050 feet by Kentucky coordinate grid values:

Ap—0 to 7 inches; dark brown (10YR 3/3) silt loam; weak and moderate fine granular structure; very friable; many fine roots; neutral; clear smooth boundary.

B—7 to 20 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure parting to weak medium granular; friable; many fine roots; common dark brown (10YR 3/3) coatings on some ped faces; 10 percent channers and gravelly coarse fragments; neutral; clear smooth boundary.

C—20 to 34 inches; brown (10YR 4/3) very gravelly silt loam; massive; friable; common fine roots; 50 percent coarse fragments; many fine black and brown concretions; mildly alkaline; abrupt smooth boundary.

R—34 inches; hard limestone bedrock.

Thickness of the solum and depth to limestone bedrock range from 20 to 40 inches. Contents of coarse fragments range from 0 to 15 percent in the A and B horizons and from 15 percent to 75 percent in the C horizon. The soil ranges from slightly acid to moderately alkaline throughout.

The A horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 or 3. Texture is silt loam.

The B horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 2 through 4. Texture is silt loam, loam, or silty clay loam.

The C horizon has the same color range as the B horizon. Texture is loam, silt loam, or silty clay loam with gravelly analogs.

The Boonesboro soils in this survey area are a taxadjunct to the Boonesboro series, because the A horizon is less than 10 inches thick, and the content of coarse fragments in the B horizon is less than 15 percent. These properties are outside the range of the Boonesboro series; however, the use, management, and behavior are similar to the Boonesboro series.

Brassfield Series

The Brassfield series consists of moderately deep, well drained soils that have moderate permeability. They formed in residuum from dolomite interbedded with calcareous mudstone and siltstone. These soils are on hillsides and narrow ridges. Slopes range from 6 to 35 percent.

Brassfield soils are on similar landforms with Shrouts, Cynthiana, Faywood, Beasley, and Crider soils. Shrouts, Cynthiana, Faywood, and Beasley soils are clayey. Crider soils are deep and have a fine-silty control section.

Typical pedon of Brassfield silty clay loam, in an area of Brassfield-Shrouts-Beasley complex, 12 to 35 percent slopes on soil map sheet 12; about 2.3 miles south (slightly west) of Howards Mill, about 325 feet north of Kentucky Highway 713, 150 feet west of a paved road; east-west about 2,112,900 feet and north-south 194,000 feet by Kentucky coordinate grid values:

Ap—0 to 6 inches; dark brown (10YR 3/3) silty clay loam; moderate medium granular and weak medium subangular blocky structure; firm; many fine roots; few dolomitic sandstone channers; neutral; clear smooth boundary.

B—6 to 15 inches; light olive brown (2.5Y 5/6) silty clay loam; weak medium subangular blocky structure; firm; common fine roots; many fine brown (10YR 4/3) and dark brown (10YR 3/3) coatings on ped faces; 10 percent dolomitic siltstone and sandstone channers; neutral; clear smooth boundary.

C—15 to 27 inches; olive yellow (2.5Y 6/6) very channery loam; olive and gray mottles that are related to parent materials; friable; common fine roots; 50 percent highly weathered siltstone and sandstone channers; mildly alkaline; clear smooth boundary.

Cr—27 to 32 inches; dolomite, sandstone, and siltstone interbedded with soft, calcareous shale.

Thickness of the solum ranges from 10 to 30 inches. Depth to bedrock is 20 to 40 inches. Contents of coarse fragments ranges from 8 to 30 percent in the solum and from 30 to 60 percent in the C horizon. The soil ranges from neutral to moderately alkaline throughout.

The A horizon has hue of 10YR or 2.5Y, value of 3 through 5, and chroma of 1 through 3. Texture is silty clay loam.

The B horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 or 6, and chroma of 1 through 6. Texture is silt loam, loam, silty clay loam, or clay loam with channery analogs.

The C horizon has the same color range and textures as the B horizon. Mottles in shades of gray, olive, and brown are inherited from the parent rock.

The Brassfield soils in the survey area are a taxadjunct to the Brassfield series, because they have more than 15 percent coarse fragments and colors of 10YR and 2.5Y in the C horizon. They also have color value of 3 in the A horizon, and in some pedons, reaction is neutral. These are outside the range of the Brassfield series; however, the use, management, and behavior are similar to the Brassfield series.

Caneyville Series

The Caneyville series consists of moderately deep, well drained soils that have moderately slow permeability. They formed in residuum from limestone. These soils are on very narrow ridges in the southern part of the county. Slopes range from 6 to 60 percent.

Caneyville soils are on similar landforms with Bledsoe soils and rock outcrops. Bledsoe soils are deep colluvial soils.

Typical pedon of Caneyville silt loam, in an area of Bledsoe-Rock outcrop-Caneyville complex, 6 to 60 percent slopes; on soil map sheet 17; on the Montgomery-Powell County line, 725 feet west of Kentucky Highway 213; east-west (north system) about 2,108,800 feet and north-south (north system) 148,100 feet by Kentucky coordinate grid values:

O1—3 inches to 1 inch; recent forest litter from hardwoods.

O2—1 inch to 0; very dark grayish brown (10YR 3/2) partly decomposed forest litter.

Ap—0 to 5 inches; yellowish brown (10YR 5/4) silt loam; weak medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

B21t—5 to 10 inches; yellowish red (5YR 5/8) silty clay; moderate medium subangular blocky structure parting to moderate fine angular blocky; very firm; common fine roots; common clay films; common fine yellowish brown (10YR 5/6) coatings; medium acid; clear smooth boundary.

B22t—10 to 20 inches; yellowish red (5YR 5/8) clay; moderate medium subangular blocky structure parting to moderate very fine angular blocky; very firm; few fine roots; continuous clay films; few limestone channers and chert fragments; neutral; clear smooth boundary.

B3—20 to 28 inches; mixed, red (2.5YR 4/8) and yellowish brown (10YR 5/6) clay; weak medium subangular blocky structure parting to weak fine angular blocky; very firm; few fine roots; common clay films; few limestone channers and chert fragments; neutral; clear wavy boundary.

R—28 inches; hard limestone bedrock.

Thickness of the solum and depth to bedrock range from 20 to 40 inches. Content of coarse fragments ranges from 0 to 10 percent throughout. The soil ranges from very strongly acid to neutral in the upper part of the solum, and medium acid to mildly alkaline in the lower part.

The A horizon has hue of 10YR or 7.5YR, value of 4 through 6, and chroma of 3 or 4. Texture is silt loam.

Some pedons have a B1 horizon that has hue of 10YR through 5YR, value of 5 or 6, and chroma of 4 through 6. Texture is silt loam or silty clay loam.

The B2t horizon has hue of 10YR through 2.5YR, value of 4 or 5, and chroma of 4 through 8. Texture is silty clay loam, silty clay, or clay.

The B3 or C horizon has matrix colors and mottles in shades of red, brown, yellow, olive, or gray. Texture is silty clay or clay.

Colyer Series

The Colyer series consists of shallow, well drained soils that have slow permeability. They formed in residuum from acid black shale. These soils are on hillsides and very narrow ridges. Slopes range from 12 to 60 percent.

Colyer soils are on similar landforms with Trappist, Lenberg, Shelocta, and Tilsit soils. Trappist and Lenberg soils are moderately deep. Shelocta soils are deep and have a fine-loamy control section. Tilsit soils have a fragipan and are deep.

Typical pedon of Colyer silt loam, in an area of Trappist-Colyer-Shelocta complex, 12 to 30 percent slopes, eroded; on soil map sheet 13; about 3.1 miles southeast of Howards Mill, 2,300 feet east (slightly north) from the intersection of Kentucky Highway 213 and Kentucky Highway 713, 850 feet north of Kentucky Highway 713; east-west about 2,124,800 feet and north-south 191,500 feet by Kentucky coordinate grid values:

Ap—0 to 4 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; friable; many fine roots; 10 percent shale fragments; slightly acid; clear smooth boundary.

B—4 to 10 inches; strong brown (7.5YR 5/6) very shaly silty clay; mottles in shades of brown, yellow, and red that are related to the shale fragments; weak medium subangular blocky structure parting to moderate fine angular blocky; very firm; many fine roots; 45 percent black shale fragments; very strongly acid; clear smooth boundary.

C—10 to 16 inches; strong brown (7.5YR 5/6) extremely shaly silty clay; common fine faint grayish brown mottles result from parent materials; relict platy structure; very firm; few fine roots; 80 percent shale fragments; extremely acid; clear smooth boundary.

R—16 inches; hard black acid shale.

Thickness of the solum ranges from 8 to 20 inches. Depth to bedrock ranges from 10 to 20 inches. Content of coarse fragments ranges from 5 to 40 percent in the A horizon, from 35 to 55 percent in the B horizon, and from 35 to 90 percent in the C horizon. The soil ranges from medium acid to extremely acid in the A horizon, except where limed. The soil is very strongly acid to extremely acid in the B and C horizons.

The A horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 6. Texture is silt loam.

The B horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 4 through 6. Mottles in shades of red, brown, and yellow are inherited from parent rock. Texture is silty clay loam, silty clay, or clay, with shaly analogs.

The C horizon has the same color range and the textures as the B horizon. Mottles in shades of gray and olive are inherited from parent rock.

Crider Series

The Crider series consists of deep, well drained soils that have moderate permeability. The upper part of these soils formed in loess deposits, and the lower part formed in old alluvial deposits. These high stream terrace soils are on broad ridges and side slopes. Slopes range from 2 to 15 percent.

Crider soils are on similar landforms with Aaron, Beasley, Robertsville, and Shelbyville soils. Aaron, Beasley, Lowell, and Faywood soils have a clayey subsoil. Nicholson and Robertsville soils have a fragipan. The subsoil of Shelbyville soils is not as red as that of Crider soils.

Typical pedon of Crider silt loam, 2 to 6 percent slopes; on soil map sheet 8; about 1.2 miles west (slightly south) of Mount Sterling, 1,300 feet south of U.S. Highway 60, about 0.8 mile east of Reid Village; east-west about 2,082,700 feet and north-south 200,200 feet by Kentucky coordinate grid values:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; moderate medium granular structure parting to moderate fine granular; friable; neutral; clear smooth boundary.

B1—10 to 20 inches; brown (7.5YR 4/4) silt loam with brown (10YR 4/3) coatings; weak medium subangular blocky and moderate medium granular structure parting to moderate fine granular; friable; slightly acid; clear smooth boundary.

B21t—20 to 28 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure parting to weak fine subangular blocky; friable; common small black concretions; slightly acid; gradual smooth boundary.

B22t—28 to 36 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium angular blocky structure parting to moderate fine angular blocky; firm; many small black concretions; medium acid; gradual smooth boundary.

IIB23t—36 to 57 inches; red (2.5YR 4/6) silty clay loam; moderate medium angular blocky structure parting to moderate fine angular blocky; firm; few quartz pebbles; strongly acid; clear smooth boundary.

IIB24t—57 to 68 inches; red (2.5YR 4/6) silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium angular blocky structure parting to moderate fine angular blocky; firm; few quartz pebbles; many large black concretions and coatings; strongly acid; gradual smooth boundary.

IIB3—68 to 75 inches; yellowish red (5YR 5/8) silty clay loam; common medium distinct red (2.5YR 5/6) and brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure parting to moderate very fine angular blocky; firm; few quartz pebbles; common large black concretions; strongly acid.

Thickness of the solum ranges from 60 to more than 100 inches. Depth to bedrock ranges from 60 to more than 160 inches. Depth to the lithologic discontinuity ranges from 24 to 48 inches. Content of coarse fragments ranges from 0 to 15 percent below the lithologic discontinuity. The soil ranges from neutral to strongly acid to a depth of about 40 inches. Below a depth of 40 inches, the soil ranges from slightly acid to very strongly acid.

The A horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 2 through 4. Texture is silt loam.

The B1 and B21t horizons have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 through 6. Texture is silt loam or silty clay loam.

The B22t horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 through 8. Texture is silt loam or silty clay loam.

The IIB horizon has hue of 10R, 2.5YR, or 5YR, value of 3 through 5, and chroma of 4 through 8. In some pedons, the horizon is mottled in shades of red, brown, yellow, and gray. Texture is silty clay loam, silty clay, or clay. Some pedons have a IIC horizon that has the same color range and textures as the IIB horizon.

Cuba Series

The Cuba series consists of deep, well drained soils that have moderate permeability. They formed in acid alluvium washed from soils of shale, siltstone, and sandstone origin. These soils are on flood plains and are subject to occasional flooding, mainly in winter and spring. Slopes range from 0 to 3 percent.

Cuba soils are on similar landforms with Stendal, Peoga, Morehead, Tyler, and Tilsit soils. Stendal soils are somewhat poorly drained. Peoga and Morehead soils are on low stream terraces. Tyler and Tilsit soils have a fragipan.

Typical pedon of Cuba silt loam; on soil map sheet 16; about 2.5 miles southeast of Lucky Stop, 600 feet west from the Montgomery-Menifee County line in the Slate Creek bottom land, about 0.5 mile south of U.S. Highway 460; east-west (north system) about 2,136,300 feet and north-south (north system) 161,750 feet by Kentucky coordinate grid values:

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

B1—7 to 12 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; common dark yellowish brown (10YR 4/4) coatings on some ped faces; very strongly acid; clear smooth boundary.

B2—12 to 50 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; gradual smooth boundary.

C—50 to 65 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common black coatings; very strongly acid.

Thickness of the solum ranges from 20 to 60 inches. Depth to bedrock is greater than 60 inches. Contents of coarse fragments ranges from 0 to 15 percent in the C horizon. The A horizon ranges from neutral to very strongly acid. B and C horizons are very strongly acid.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 through 4. Texture is silt loam.

The B horizon has hue of 10YR, value of 4 through 6, and chroma of 3 through 6. In some pedons, this horizon has gray mottles below 30 inches. Texture is silt loam.

The C horizon has the same color range as the B horizon. Texture is silt loam, loam, or fine sandy loam.

Cynthiana Series

The Cynthiana series consists of shallow, well drained soils that have moderately slow permeability. They formed in residuum from limestone interbedded with calcareous shale. These soils are on hillsides. Slopes range from 12 to 35 percent.

Cynthiana soils are on similar landforms with Lowell and Faywood soils. Lowell soils are deep, and Faywood soils are moderately deep.

Typical pedon of Cynthiana silty clay loam, in an area of Faywood-Cynthiana complex, 12 to 35 percent slopes, eroded; on soil map sheet 9; about 0.8 of a mile west (slightly south) from Howards Mill, about 1,300 feet south of Kentucky Highway 1331, 650 feet west of Harpers Ridge Road; east-west about 2,112,250 feet and north-south 204,700 feet by Kentucky coordinate grid values:

Ap—0 to 4 inches; brown (10YR 4/3) silty clay loam; weak medium subangular blocky structure parting to moderate fine angular blocky; firm; many fine roots; 5 percent limestone channers; neutral; abrupt smooth boundary.

B21t—4 to 11 inches; yellowish brown (10YR 5/4) clay; moderate medium subangular and angular blocky structure parting to moderate fine angular blocky; very firm; common clay films; common brown (10YR 4/3) coatings on some ped faces; 5 percent limestone channers; neutral; clear smooth boundary.

B22t—11 to 17 inches; light olive brown (2.5Y 5/4) flaggy clay; weak medium subangular and angular blocky structure parting to moderate fine angular blocky; very firm; few very fine roots; common yellowish brown (10YR 5/4) clay films; common brown (10YR 4/3) coatings on some ped faces; 20 percent limestone flagstones; neutral; clear smooth boundary.

R—17 inches; hard limestone bedrock with interbedded calcareous shales.

Thickness of the solum and depth to bedrock range from 10 to 20 inches. Content of coarse fragments ranges from 0 to 30 percent in the A horizon, and from 5 to 35 percent in the B and C horizons. The soil ranges from slightly acid to mildly alkaline.

The A horizon has hue of 10YR or 2.5Y, value of 4, and chroma of 2 through 4. Texture is silty clay loam.

The B2t horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 4 through 6. Texture is silty clay or clay, and their channery or flaggy analogs.

Some pedons have a C horizon that has the same color range and textures as the B2t horizon. Mottles in shades of brown, olive, or gray are inherited from parent rocks.

Elk Series

The Elk series consists of deep, well drained soils that have moderate permeability. They formed in mixed alluvium washed from soils of limestone, shale, sandstone, and siltstone origin. These soils are on stream terraces. Slopes range from 2 to 12 percent.

Elk soils are on similar landforms with Huntington, Boonesboro, Melvin, Robertsville, Otwell, Woolper, and Sees soils. Huntington and Boonesboro soils are on flood plains. Robertsville and Melvin soils are poorly drained, and Otwell Soils have a fragipan. Woolper and Sees soils have a clayey subsoil.

Typical pedon of Elk silt loam, 2 to 6 percent slopes; on soil map sheet; about 3 miles northeast of Mount Sterling, 200 feet west of Hinkston Road; east-west about 2,094,600 feet and north-south 217,850 feet by Kentucky coordinate grid values:

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; very friable; many fine roots; neutral; abrupt smooth boundary.

B21t—9 to 17 inches; strong brown (7.5YR 5/6) silty clay loam; weak and moderate medium subangular blocky structure parting to weak and moderate fine subangular blocky; friable; common fine roots; few patchy clay films; common fine brown and black concretions; very strongly acid; clear smooth boundary.

B22t—17 to 35 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure parting to moderate fine angular and subangular blocky; firm; few fine roots; common clay films; 1 percent quartz pebbles; common fine brown and black concretions; very strongly acid; gradual smooth boundary.

B23t—35 to 48 inches; strong brown (7.5YR 5/6) silty clay loam; weak medium subangular blocky structure; firm; few thin patchy clay films; common fine brown and black concretions; very strongly acid; gradual smooth boundary.

IIB31—48 to 58 inches; yellowish brown (10YR 5/8) silty clay; weak medium subangular blocky structure; firm; many fine brown and black concretions; very strongly acid; clear smooth boundary.

IIC—58 to 65 inches; yellowish brown (10YR 5/8) silty clay; common fine olive yellow (2.5Y 6/6) mottles; very firm; strongly acid.

Thickness of the solum ranges from 40 to 60 inches. Depth to bedrock is more than 60 inches. The soil ranges from slightly acid to very strongly acid, except where limed.

The A horizon has hue of 7/5YR or 10YR, value of 4 or 5, and chroma of 2 through 4. Texture is silt loam.

The B2t horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 through 6. Texture is silt loam or silty clay loam.

In some pedons, the IIB3 and IIC horizons have hue of 7.5YR, 10YR, or 2.5Y, value of 4 through 6, and chroma of 4 through 8. Texture is silty clay loam or silty clay.

Faywood Series

The Faywood series consists of moderately deep, well drained soils that have moderately slow to slow permeability. They formed in residuum from limestone interbedded with calcareous shale and siltstone. These soils are on narrow ridges and hillsides. Slopes range from 6 to 35 percent.

Faywood soils are on similar landforms with Aaron, Lowell, Nicholson, Shelbyville, and Cynthiana soils. Aaron, Lowell, Nicholson, and Shelbyville soils are deep. Cynthiana soils are shallow to bedrock.

Typical pedon of Faywood silt loam, 6 to 12 percent slopes; on soil map sheet 4, about 2 miles west (slightly south) of Sideview, 3,300 feet southeast from the intersection of the Montgomery, Bourbon, and Clark County lines; east-west about 2,051,200 feet and north-south 221,900 feet by Kentucky coordinate grid values:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

B21t—6 to 13 inches; yellowish brown (10YR 5/6) silty clay; moderate coarse subangular blocky structure parting to moderate medium subangular blocky, which parts to moderate fine angular blocky structure; very firm; few fine roots; thin continuous yellowish brown (10YR 5/4) clay films on ped faces; neutral; clear smooth boundary.

B22t—13 to 22 inches; yellowish brown (10YR 5/6) clay; few fine faint light olive brown mottles; weak coarse subangular blocky structure parting to weak medium subangular blocky, parting to weak and moderate very fine angular blocky; very firm; few fine roots; common thin clay films; common fine dark brown concretions; strongly acid; clear smooth boundary.

B3—22 to 33 inches; light olive brown (2.5Y 5/6) silty clay; few fine faint olive and yellowish brown mottles; moderate coarse subangular blocky structure parting to weak medium subangular blocky; firm; few very fine roots; common thin clay films; common light olive brown (2.5Y 5/4) and olive brown (2.5Y 4/4) coatings on ped faces; mildly alkaline; clear smooth boundary.

R—33 inches; hard limestone bedrock with interbedded calcareous shale and siltstone.

Thickness of the solum and depth to bedrock range from 20 to 40 inches. Content of coarse fragments ranges from 0 to 15 percent in the solum and from 0 to 25 percent in the C horizon. The soil ranges from strongly acid to mildly alkaline throughout.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Texture is silt loam.

Some pedons have a B1 horizon that has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. Texture is silt loam or silty clay loam.

The B2t horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 or 5, and chroma of 4 through 6. Texture is silty clay or clay.

The B3 or C horizon, if present, has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 4 through 6. Mottles in shades of gray, olive, and brown are inherited from parent material. Texture is silty clay or clay.

Huntington Series

The Huntington series consists of deep, well drained soils that have moderate permeability. They formed in alluvium washed from upland soils of limestone, calcareous shale, and siltstone origin. These soils are on flood plains and are subject to occasional flooding, mostly in winter and spring. Slopes range from 0 to 3 percent.

Huntington soils are on similar landforms with Melvin, Boonesboro, Robertsville, Elk, Sees, and Woolper soils. Robertsville and Melvin soils are poorly drained. Boonesboro soils are moderately deep. Otwell, Elk, and Sees soils are on stream terraces. Woolper soils have a clayey subsoil.

Typical pedon of Huntington silt loam, occasionally flooded; on soil map sheet 13; about 3.1 miles south (slightly east) of Howards Mill, 3,000 feet northeast from the intersection of Kentucky Highway 213 and Kentucky Highway 713, about 225 feet east of Harpers Ridge Road; east-west about 2,120,450 feet and north-south 193,000 feet by Kentucky coordinate grid values:

Ap—0 to 7 inches; dark brown (10YR 3/3) silt loam; weak and moderate fine granular structure; very friable; many fine and common medium roots; neutral; clear smooth boundary.

A12—7 to 21 inches; dark brown (10YR 3/3) silt loam; weak and moderate medium subangular blocky structure parting to weak fine subangular blocky; friable; common fine and common medium roots; mildly alkaline; gradual smooth boundary.

B—21 to 65 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; few fine and medium roots; common coatings slightly darker than ped interiors; mildly alkaline.

Thickness of the solum is more than 40 inches. Depth to bedrock is greater than 60 inches. The soil ranges from medium acid to mildly alkaline throughout. The mollic epipedon ranges from 10 to 24 inches thick.

The A horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 through 3. Texture is silt loam.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. Ped coatings can have value of 3. Texture is silt loam or silty clay loam.

Latham Series

The Latham series consists of moderately deep, moderately well drained soils that have slow permeability. They formed in residuum from acid shale and siltstone. These soils are on narrow ridges and side slopes. Slopes range from 20 to 60 percent.

Latham soils are on similar landforms with rock outcrops and Shelocta soils. Shelocta soils are deep and have a fine-loamy control section.

Typical pedon of Latham silt loam, in an area of Latham-Shelocta-Rock outcrop complex, 20 to 60 percent slopes; on soil map sheet 18; about 7,000 feet west (slightly south) from the intersection of the Montgomery, Menifee, and Powell County lines, 2.8 miles east from Sid Calk Lake, 3,200 feet north of the Powell and Montgomery County line; east-west (north system) about 2,131,850 feet and north-south (north system) 151,650 feet by Kentucky coordinate grid values:

O1—3 inches to 1 inch; recent forest litter from hardwoods.

O2—1 inch to 0; very dark grayish brown (10YR 3/2) partly decomposed forest litter.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; very friable; many fine, medium, and coarse roots; 10 percent sandstone fragments; very strongly acid; clear smooth boundary.

B1—3 to 6 inches; brownish yellow (10YR 6/6) silt loam; weak medium subangular blocky structure parting to weak fine subangular blocky; friable; many fine and medium and few coarse roots; very strongly acid; clear smooth boundary.

B21t—6 to 13 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular and angular blocky; firm; many fine and common medium and coarse roots; many thin clay films; few thin shale fragments; very strongly acid; clear smooth boundary.

B22t—13 to 21 inches; yellowish red (5YR 5/6) silty clay; common medium faint light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure that has relict platy shale; firm; few fine and medium roots; many clay films; few thin shale fragments; very strongly acid; clear smooth boundary.

C—21 to 32 inches; strong brown (7.5YR 5/6) and gray (10YR 6/1) very shaly silty clay; mottles in shades of yellow and red are related to parent material; thin bedded relict platy shale structure; very firm; 60 percent shale fragments; very strongly acid; clear smooth boundary.

Cr—32 to 40 inches; strong brown (7.5YR 4/4) and grayish brown (10YR 5/2) soft shale.

Thickness of the solum and depth to soft bedrock range from 20 to 40 inches. Content of coarse fragments ranges from 0 to 30 percent in the solum and from 10 to 60 percent in the C horizon. The soil ranges from strongly acid to extremely acid throughout.

The A horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 4. Texture is silt loam.

The B1 horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 through 6. Texture is silt loam or silty clay loam.

The B21t horizon has hue of 10YR or 7.5YR, value of 4 through 6, and chroma of 2 through 8. Texture is silty clay loam, silty clay, or clay.

The B22t horizon has hue of 5YR through 2.5Y, value of 4 through 6, and chroma of 2 through 8. Texture is silty clay loam, silty clay, or clay.

The C horizon has the same color range as the B22t horizon. Texture is silty clay loam, silty clay, or clay, or their shaly or very shaly analogs.

Lenberg Series

The Lenberg series consists of moderately deep, well drained soils that have moderately slow permeability. They formed in residuum from soft acid shale. These soils are on narrow ridges and hillsides. Slopes range from 6 to 50 percent.

Lenberg soils are on similar landforms with Tilsit, Trappist, Colyer, and Shelocta soils. Tilsit soils are deep and have a fragipan. Trappist and Colyer soils have base saturation less than 35 percent. Shelocta soils are deep and have a fine-loamy control section.

Typical pedon of Lenberg silt loam, in an area of Lenberg-Shelocta Complex, 20 to 50 percent slopes, eroded; on soil map sheet 16; about 3.5 miles east of Jeffersonville, 1 mile north of U.S. Highway 460, 1 mile east of a paved road; east-west (north system) about 2,134,000 feet and north-south (north system) 174,250 feet by Kentucky coordinate grid values:

01—1 to 0.5 inch; pine needle leaf litter.

02—0.5 inch to 0; mostly decomposed leaf litter.

Ap—0 to 3 inches; brown (10YR 5/3) silt loam; weak fine and medium granular structure; very friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

B21t—3 to 7 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular and angular blocky structure; friable; common fine and medium roots; few fine pores; few thin clay films; very strongly acid; clear smooth boundary.

B22t—7 to 14 inches; strong brown (7.5YR 5/6) silty clay loam; few fine faint light yellowish brown mottles; moderate medium subangular and angular blocky structure; firm; common fine and medium roots; few fine pores; nearly continuous clay films; few soft gray shale fragments in lower 2 inches; very strongly acid; clear smooth boundary.

B23t—14 to 20 inches; yellowish red (5YR 4/6) silty clay loam; many fine distinct light brownish gray (2.5Y 6/2) mottles and soft shale fragments; moderate medium subangular blocky structure parting to moderate fine angular blocky; firm; few fine roots; few fine pores; nearly continuous clay films; very strongly acid; clear smooth boundary.

B3—20 to 28 inches; mottled dark yellowish brown (10YR 4/4) and light olive gray (5Y 6/2) silty clay loam; weak medium and fine angular blocky structure; firm; few fine roots; few fine pores; many thin clay films; 10 percent soft dark brown shale fragments, some coated with light gray; very strongly acid; smooth boundary.

C—28 to 33 inches; mottled dark yellowish brown (10YR 4/4) and light brownish gray (2.5Y 6/2) very shaly silty clay loam; weak relict shale structure and some weak medium subangular blocky; firm; few fine roots; 50 percent soft dark brown shale fragments, mostly coated with light gray; very strongly acid; clear smooth boundary.

Cr—33 to 40 inches; dark brown soft shale; light gray coatings between layers.

Thickness of the solum and depth to soft bedrock range from 20 to 40 inches. Content of coarse fragments ranges from 0 to 30 percent in the solum and from 5 to 60 percent in the C horizon. The soil ranges from strongly acid to very strongly acid throughout, except where limed.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 through 6. Texture is silt loam.

The B2t horizon has hue of 10YR, 7.5YR, or 5YR, values of 4 or 5, and chroma of 4 through 8. Mottles are in shades of brown, red, and yellow. Below the upper 10 inches of the argillic horizon, mottles are in shades of gray. Texture is silty clay loam, silty clay, or clay.

Some pedons have a B3 horizon that has the same color range and texture as the lower part of the B2t horizon.

The C horizon has matrix colors in shades of gray, brown, yellow, olive, and gray. Texture is silty clay, clay, or their shaly and very shaly analogs.

Lowell Series

The Lowell series consists of deep, well drained soils that have moderately slow permeability. They formed in residuum from limestone interbedded with calcareous shale and siltstone. These soils are on narrow ridges and hillsides. Slopes range from 2 to 35 percent.

Lowell soils are on similar landforms with Cynthiana, Faywood, Nicholson, Crider, and Shelbyville soils. Cynthiana soils are shallow to bedrock, and Faywood soils are moderately deep. Nicholson soils have a fragipan. Crider and Shelbyville soils have a fine-silty control section.

Typical pedon of Lowell silt loam, 2 to 6 percent slopes on soil map sheet 6; about 2 miles northeast of Howards Mill, 75 feet north of Turley Road, 1,300 feet south of Stepstone Road; east-west about 2,109,550 feet and north-south 213,650 feet by Kentucky coordinate grid values:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; weak medium granular structure; very friable; medium acid; clear smooth boundary.

B1—10 to 14 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular blocky; firm; common dark yellowish brown (10YR 4/4) coatings on ped faces; slightly acid; clear smooth boundary.

B21t—14 to 24 inches; yellowish brown (10YR 5/6) clay; moderate medium angular blocky structure parting to strong fine angular blocky; very fine; slightly acid; gradual smooth boundary.

B22t—24 to 35 inches; yellowish brown (10YR 5/6) clay; many medium faint olive yellow (2.5Y 6/6) mottles; moderate medium angular blocky structure parting to moderate fine angular blocky; very firm; neutral; gradual smooth boundary.

B3—35 to 50 inches; light olive brown (2.5Y 5/6) clay; few fine faint yellowish brown mottles; moderate very fine angular blocky structure; very firm; many medium dark brown concretions; mildly alkaline; clear smooth boundary.

R—50 inches; limestone bedrock.

Thickness of the solum ranges from 30 to 60 inches. Depth to hard bedrock ranges from 40 to 80 inches. Content of coarse fragments ranges from 0 to 15 percent in the lower part of the solum and from 1 to 50 percent in the C horizon. The soil ranges from slightly acid to very strongly acid to a depth of about 30 inches and from strongly acid to mildly alkaline below a depth of about 30 inches.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5 and chroma of 2 through 4. Texture is silt loam.

The B1 horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 through 6. Texture is silt loam, silty clay loam, or silty clay.

The B2t horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 4 or 5, and chroma of 4 through 8. In most pedons, the lower part of the B2t horizon has mottles in shades of brown, red, olive, and gray. Texture is silty clay or clay.

The B3 and C horizons have hue of 5Y through 10YR, value of 4 through 6, and chroma of 2 through 8. Texture is silty clay or clay.

Melvin Series

The Melvin series consists of deep, poorly drained soils that have moderate permeability. They formed in alluvium washed from upland soils of limestone, calcareous shale, and siltstone origin. These soils are on flood plains and are subject to frequent flooding, mainly in winter and spring. Slopes range from 0 to 3 percent.

Melvin soils are on similar landforms with Huntington, Boonesboro, Elk, Sees, Otwell, and Robertsville soils. Huntington, Boonesboro, and Elk soils are well drained. Sees soils have a clayey subsoil. Otwell and Robertsville soils have a fragipan.

Typical pedon of Melvin silt loam, frequently flooded; on soil map sheet 11; about 3.1 miles southwest of Mount Sterling at the head of Hinkston Creek, about 1,900 feet west of Prewitt Pike; east-west about 2,078,250 feet and north-south 190,100 feet by Kentucky coordinate grid values:

Ap—0 to 7 inches; dark grayish brown (2.5Y 4/2) silt loam; common fine faint olive brown mottles; weak fine granular structure; very friable; many fine roots; neutral; clear smooth boundary.

A3—7 to 15 inches; dark grayish brown (2.5Y 4/2) silt loam; common fine faint olive brown mottles; weak medium subangular blocky structure; very friable; common fine roots; common brown and black concretions; neutral; clear smooth boundary.

B21g—15 to 26 inches; grayish brown (2.5Y 5/2) silt loam; few fine faint light olive brown mottles; weak medium prismatic structure parting to weak medium subangular blocky; friable; few fine roots; common brown and black concretions; neutral; gradual smooth boundary.

B22g—26 to 40 inches; gray (10YR 5/1) silt loam; many medium distinct yellowish brown (10YR 5/4) mottles; weak medium prismatic structure parting to weak medium subangular blocky; friable; common brown and black concretions; neutral; clear smooth boundary.

C—40 to 60 inches; gray (10YR 5/1) silt loam; many coarse distinct yellowish brown (10YR 5/8) mottles; friable; common brown and black concretions; neutral.

Thickness of the solum ranges from 20 to 40 inches. Depth to bedrock is greater than 60 inches. Content of coarse fragments ranges from 0 to 20 percent below 30 inches. The soil ranges from slightly acid to mildly alkaline throughout.

The A horizon has hue of 10YR through 5Y, value of 3 through 7, and chroma of 1 through 3. Mottles may have chroma of 4. Texture is silt loam.

The B horizon has hue of 10YR through 5Y, value of 4 through 7, and chroma of 0 through 2. Mottles are in shades of brown and red. Texture is silt loam or silty clay loam.

The C horizon has the same color range and texture as the B horizon.

Morehead Series

The Morehead series consists of deep, moderately well drained to somewhat poorly drained soils that have moderate permeability. They formed in acid alluvium washed from upland soils of acid shale and siltstone origin. These soils are on low stream terraces and are subject to rare flooding. Slopes range from 0 to 4 percent.

Morehead soils are on similar landforms with Cuba, Stendal, Tilsit, Tyler, and Peoga soils. Cuba and Stendal soils are on flood plains. Tilsit and Tyler soils have a fragipan. Peoga soils are poorly drained.

Typical pedon of Morehead silt loam, rarely flooded; on soil map sheet 16; about 6,200 feet south of U.S. Highway 460 at Lucky Stop, 150 feet south of Kentucky Highway 1050; east-west (north system) about 2,124,400 feet and north-south (north system) 163,500 feet by Kentucky coordinate grid values:

Ap—0 to 6 inches; yellowish brown (10YR 5/4) silt loam; few fine faint light brownish gray and common fine distinct yellowish brown (10YR 5/8) mottles; weak medium granular structure; friable; many fine roots; medium acid; clear smooth boundary.

B1—6 to 13 inches; light olive brown (2.5Y 5/4) silt loam; many medium distinct olive (5Y 5/3) and common fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine roots; strongly acid; clear smooth boundary.

B2t—13 to 35 inches; light olive brown (2.5Y 5/6) silt loam; common fine faint light yellowish brown and light brownish gray mottles; weak and moderate medium subangular blocky structure; friable; few fine roots; few thin clay films; many light yellowish brown (10YR 6/4) coatings; very strongly acid; gradual smooth boundary.

B31—35 to 46 inches; mottled light yellowish brown (2.5Y 6/4) yellowish brown (10YR 5/8) and light brownish gray (2.5Y 6/2) silty clay loam; weak coarse subangular blocky structure parting to weak medium subangular blocky; firm; very strongly acid; gradual smooth boundary.

B32—46 to 60 inches; light yellowish brown (2.5Y 6/4) silty clay loam; common fine and medium light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure parting to weak medium subangular blocky; firm; common fine and medium dark brown concretions; strongly acid.

Thickness of the solum ranges from 40 to 60 inches. Depth to bedrock is greater than 60 inches. The soil ranges from strongly acid to very strongly acid throughout, except where limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 through 4. Mottles have value of 5 or 6, and chroma of 2 through 8. Texture is silt loam.

The B horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 5 or 6, and chroma of 4 through 6. Mottles are in shades of gray, brown, and olive. Texture is silt loam or silty clay loam.

Some pedons have a C horizon that has hue of 10YR or 2.5Y, value of 5 through 7, and chroma of 1 through 6. Texture is silt loam, loam, or silty clay loam.

Nicholson Series

The Nicholson series consists of deep, moderately well drained soils that have a slowly permeable fragipan. The upper part of the soil formed in loess deposits, and the lower part of the soil formed in residuum from limestone interbedded with calcareous shale and siltstone. These soils are on broad ridges. Slopes range from 2 to 8 percent.

Nicholson soils are on similar landforms with Lowell, Beasley, Crider, Shelbyville, and Robertsville soils. Lowell, Beasley, Crider, and Shelbyville soils are well drained. Robertsville soils are poorly drained.

Typical pedon of Nicholson silt loam, 2 to 8 percent slopes; on soil map sheet 8; about 3.6 miles east (slightly south) of Mount Sterling, 0.5 mile northeast from the intersection of U.S. Highway 60 and Grassy Pruitt Road, 300 feet south of U.S. Highway 60; east-west about 2,070,600 feet and north-south 196,400 feet by Kentucky coordinate grid values:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; weak medium granular structure; very friable; neutral; clear smooth boundary.

B2t—10 to 27 inches; yellowish brown (10YR 5/6) silt loam; weak and moderate subangular blocky structure; friable; few clay films; medium acid; gradual smooth boundary.

Bx—27 to 49 inches; yellowish brown (10YR 5/6) silt loam; few fine faint light yellowish brown mottles; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm, compact, and brittle; strongly acid; diffuse smooth boundary.

IIB3—49 to 60 inches; yellowish brown (10YR 5/6 and 5/8) silty clay; common medium distinct gray (10YR 5/1) mottles; weak medium subangular blocky structure; very firm; sticky and plastic; medium acid.

Thickness of the solum ranges from 40 to 80 inches. Depth to bedrock ranges from 48 to 100 inches. Depth to the fragipan ranges from 16 to 30 inches. The soil ranges from slightly acid to very strongly acid through the fragipan, and from strongly acid to mildly alkaline below the fragipan.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 through 4. Texture is silt loam.

Some pedons have a B1 horizon that has the same color range and texture as the B2t horizon. The B2t horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. Texture is silt loam or silty clay loam.

The Bx horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 through 5, chroma of 4 through 8, and has mottles that have chroma of 2 or less. Texture is silt loam or silty clay loam.

The IIB horizon has hue of 2.5YR through 2.5Y, value of 4 or 5, chroma of 4 through 6, with few to many mottles that have chroma of 3 or less. Texture is silty clay or clay. Some pedons have a IIC horizon that has the same color range and texture as the IIB horizon.

Otwell Series

The Otwell series consists of deep, moderately well drained soils that have a slowly permeable fragipan. They formed in mixed alluvium washed from upland soils of limestone, calcareous shale, and siltstone origin. These soils are on high and low stream terraces. Slopes range from 2 to 8 percent.

Otwell soils are on similar landforms with Elk, Huntington, Melvin, Robertsville, and Sees soils. Elk and Huntington soils are well drained. Melvin and Robertsville soils are poorly drained. Sees soils have a clayey subsoil.

Typical pedon of Otwell silt loam, 2 to 8 percent slopes, on soil map sheet 10; about 2 miles northeast of Hope, 2,900 feet north (slightly west) of the intersection of Kentucky Highway 713 and Tapp Lane, 300 feet west of Tapp Lane; east-west about 2,129,350 feet and north-south 194,850 feet by Kentucky coordinate grid values:

Ap—0 to 8 inches; light olive brown (2.5Y 5/4) silt loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

B21t—8 to 18 inches; brownish yellow (10YR 6/8) silt loam; few fine faint light yellowish brown mottles; weak and moderate medium and fine subangular blocky structure; friable; common fine roots; few patchy clay films; strongly acid; clear smooth boundary.

Bx1—18 to 28 inches; yellow (2.5Y 7/6) silt loam; common fine faint light yellowish brown and common fine distinct light brownish gray (2.5Y 6/2) mottles; moderate coarse prismatic structure parting to moderate fine subangular blocky structure; firm, compact, and brittle; strongly acid; gradual smooth boundary.

Bx2—28 to 48 inches; light yellowish brown (2.5Y 6/4) silt loam; common medium distinct brownish yellow (10YR 6/6) and common medium distinct light brownish gray (10YR 6/2) mottles; moderate very coarse prismatic structure parting to moderate medium and fine angular and subangular blocky; firm, compact, and brittle; many black and brown concretions; strongly acid; gradual smooth boundary.

B3—48 to 65 inches; yellowish brown (10YR 5/8) and light yellowish brown (2.5Y 6/4) silty clay loam; many medium distinct light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; firm; common black concretions; neutral.

Thickness of the solum ranges from 40 to 80 inches. Depth to bedrock ranges from 48 to more than 120 inches. Depth to the fragipan ranges from 18 to 32 inches. Content of coarse fragments ranges from 0 to 5 percent in the solum and from 0 to 35 percent in the C horizon. Except where limed, the soil is strongly acid or very strongly acid through the fragipan. Below the fragipan, it ranges from moderately alkaline to strongly acid.

The A horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 4 or 5, and chroma of 2 through 4. Texture is silt loam.

The Bt horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 4 through 6, and chroma of 3 through 8. Texture is silt loam or silty clay loam.

The Bx horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 4 through 7, and chroma of 2 through 8. Texture is silt loam or silty clay loam.

Some pedons have B3 and C horizons that have the same color range and texture as the Bx horizon.

Peoga Series

The Peoga series consists of deep, poorly drained soils that have moderate to moderately slow permeability. They formed in acid alluvium washed from upland soils of shale, siltstone, and sandstone origin. These soils are on low stream terraces and are subject to rare flooding. Slopes range from 0 to 3 percent.

Peoga soils are on similar landforms with Cuba, Stendal, Tilsit, Tyler, and Morehead soils. Cuba and Stendal soils are on flood plains. Tilsit and Tyler soils have a fragipan. Morehead soils are moderately well drained to somewhat poorly drained.

Typical pedon of Peoga silt loam, rarely flooded; on soil map sheet 16; about 3,000 feet northeast of Lucky Stop, 900 feet west of Science Ridge Road, 600 feet north of U.S. Highway 460; east-west (north system) about 2,123,100 feet and north-south (north system) 171,400 feet by Kentucky coordinate grid values:

Ap—0 to 8 inches; grayish brown (2.5Y 5/2) silt loam; weak medium granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.

B1g—8 to 14 inches; light brownish gray (2.5Y 6/2) silt loam; common fine faint light yellowish brown and common fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine roots; strongly acid; clear smooth boundary.

B21g—14 to 30 inches; light brownish gray (2.5Y 6/2) light silty clay loam; common fine distinct light yellowish brown (2.5Y 6/4) and brownish yellow (10YR 6/8) mottles; moderate coarse subangular blocky structure parting to weak medium subangular blocky; friable; few fine roots; few quartz pebbles; very strongly acid; gradual smooth boundary.

B22g—30 to 47 inches; light brownish gray (2.5Y 6/2) and brownish yellow (10YR 6/8) silty clay loam; common fine faint light yellowish brown mottles; moderate coarse subangular blocky structure parting to weak medium subangular and angular blocky; few fine roots; extremely acid; gradual smooth boundary.

Cg—47 to 65 inches; gray (10YR 6/1) and brownish yellow (10YR 6/8) silty clay loam stratified with gray (10YR 6/1) loam; common fine faint light yellowish brown mottles; extremely acid.

Thickness of the solum ranges from 40 to 60 inches. Depth to bedrock is greater than 60 inches. The soil ranges from medium acid to very strongly acid in the A horizon and the upper part of the Bg horizon, and from medium acid to extremely acid in the lower part of the Bg horizon and in the Cg horizon.

The A horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. Texture is silt loam.

The Bg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 7, and chroma of 1 or 2. Mottles have chroma of 1 through 8. Texture is silt loam or silty clay loam.

The Cg horizon has the same color range as the B horizon. Texture is silt loam, loam, or silty clay loam.

The Peoga soils in this survey area are a taxadjunct to the Peoga series, because the soil reaction is typically extremely acid in the lower part of the Bg horizon and the Cg horizon. This is outside the range of the series; however, the use, management, and behavior are similar to the Peoga series.

Robertsville Series

The Robertsville series consists of deep, poorly drained soils that have a slowly permeable fragipan. They formed in old mixed alluvium washed from upland soils of limestone, calcareous shale, and siltstone origin. These soils are on broad ridges and stream terraces. Slopes range from 0 to 3 percent.

Robertsville soils are on similar landforms with Nicholson, Otwell, Crider, Elk, Huntington, and Melvin soils. Nicholson and Otwell soils are moderately well drained. Crider and Elk soils are well drained. Huntington and Melvin soils are on flood plains.

Typical pedon of Robertsville silt loam; on soil map sheet 9; about 9,750 feet south (slightly west) of Howards Mill, 6,100 feet north of the Greenbrier Creek Reservoir dam, 400 feet southeast of a farm lane; east-west about 2,115,450 feet and north-south 195,950 feet by Kentucky coordinate grid values:

Ap—0 to 7 inches; grayish brown (2.5Y 5/2) silt loam; common fine faint dark grayish brown mottles; moderate fine granular structure; very friable; common fine roots; neutral; clear smooth boundary.

B1—7 to 12 inches; light brownish gray (2.5Y 6/2) silt loam; common fine faint light yellowish brown and few fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine roots; few gravelly coarse fragments; strongly acid; clear smooth boundary.

B2t—12 to 28 inches; light brownish gray (2.5Y 6/2) silt loam; common fine distinct light yellowish brown (2.5Y 6/4) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure parting to weak fine subangular blocky; friable; common very fine roots; few patch clay films; few gravelly coarse fragments; few fine dark brown concretions; very strongly acid; clear smooth boundary.

Bx1—28 to 53 inches; light yellowish brown (2.5Y 6/4) silt loam; many medium distinct gray (10YR 6/1) and yellowish brown (10YR 5/6) mottles; moderate very coarse prismatic structure parting to weak and moderate fine subangular blocky; firm, compact, and brittle; few patchy clay films; few gravelly coarse fragments; common fine and medium black and dark brown concretions; very strongly acid; gradual smooth boundary.

Bx2—53 to 60 inches; mixed, olive yellow (2.5Y 6/6), gray (10YR 6/1), and yellowish brown (10YR 5/8) silt loam; common fine faint light yellowish brown mottles; weak very coarse prismatic structure parting to weak and moderate fine subangular blocky; firm, compact, and brittle; few gravelly coarse fragments; common fine black and brown concretions; very strongly acid.

Thickness of the solum ranges from 40 to 60 inches. Depth to bedrock is more than 60 inches. Depth to the fragipan ranges from 15 to 30 inches. Except where limed, the soil is strongly acid to extremely acid through the fragipan. Below the fragipan, it ranges from neutral to very strongly acid.

The A horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2. Mottles are in shades of brown or gray. Texture is silt loam.

The B1 and B2t horizons have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. Mottles have chroma of 2 through 8. Texture is silt loam or silty clay loam.

The Bx horizon has hue of 5Y, 2.5Y, or 10YR, value of 5 through 7, and chroma of 0 through 8. Texture is silt loam or silty clay loam.

The B3 and C horizons have the same color range and texture as the Bx horizon.

Sees Series

The Sees series consists of deep, moderately well drained to somewhat poorly drained soils with slow permeability. They formed in colluvium and alluvium from upland soils of limestone, dolomite, calcareous shale, and siltstone origin. These soils are on low stream terraces. Some areas flood on rare occasions. Slopes range from 0 to 4 percent.

Sees soils are on similar landforms with Huntington, Melvin, Woolper, Elk, and Otwell soils. Huntington and Melvin soils are on flood plains. Woolper and Elk soils are well drained. Otwell soils have a fragipan.

Typical pedon of Sees silt loam, rarely flooded; on soil map sheet 15; 2.4 miles south (slightly east) of Camargo, 2,900 feet east from the intersection of Camargo-Levee Road and Welsh Road (Kentucky Highway 1618), 100 feet north of Welsh Road; east-west (north system) about 2,107,350 feet and north-south (north system) 167,900 feet by Kentucky coordinate grid values:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium subangular blocky structure parting to moderate medium granular; friable; many fine roots; neutral; clear smooth boundary.

A1—6 to 13 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak and moderate medium subangular blocky structure parting to weak fine subangular blocky; friable; common fine roots; neutral; abrupt smooth boundary.

B21t—13 to 22 inches; very dark grayish brown (2.5Y 3/2) silty clay loam; moderate coarse subangular blocky structure parting to moderate fine angular blocky; firm; common fine roots; common clay films; few brown concretions; neutral; gradual smooth boundary.

B22t—22 to 30 inches; dark grayish brown (2.5Y 4/2) silty clay; many medium faint light olive brown (2.5Y 5/6) and few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure parting to moderate fine angular blocky; firm; few fine roots; common clay films; common black and brown concretions; mildly alkaline; clear smooth boundary.

B31—30 to 47 inches; yellowish brown (10YR 5/6), light olive brown (2.5Y 5/6), and dark grayish brown (2.5Y 4/2) silty clay; weak medium subangular blocky structure parting to weak fine subangular blocky; very firm; thin patchy clay films; mildly alkaline; gradual smooth boundary.

B32—47 to 60 inches; yellowish brown (10YR 5/6) silty clay; many fine distinct dark grayish brown (2.5Y 4/2), common fine faint olive yellow and olive brown mottles; weak medium subangular blocky structure; very firm; common black and brown concretions; mildly alkaline.

Thickness of the solum ranges from 40 to 60 inches. Depth to bedrock is more than 60 inches. Content of coarse fragments range from 0 to 15 percent throughout. The soil ranges from medium acid to moderately alkaline throughout. The mollic epipedon ranges from 11 to 24 inches in thickness.

The A horizon has hue of 10YR or 2.5Y, value of 3, and chroma of 1 to 3. Texture is silt loam.

The B21t horizon has the same color range as the A horizon. Texture is silty clay loam, silty clay, or clay.

The B22t horizon has hue of 2.5Y or 10YR, value of 4 or 5, and chroma of 2 through 6. Texture is silty clay loam, silty clay, or clay.

The B3 or C horizons have hue of 2.5Y or 10YR, value of 4 through 6, and chroma of 2 through 6. Texture is the same as the B22t horizon.

The Sees soils in the survey area are a taxadjunct to the Sees series, because they have a mollic epipedon more than 10 inches thick. This is outside the range of the series; however, use, management, and behavior are similar to the Sees series.

Shelbyville Series

The Shelbyville series consists of deep, well drained soils that have moderately slow to moderate permeability. The upper layers formed in loess deposits, and the lower layers formed in residuum from limestone interbedded with calcareous shale and siltstone. These soils are on broad ridges. Slopes range from 2 to 12 percent.

Shelbyville soils are on similar landforms with Faywood, Lowell, Nicholson, and Crider soils. Faywood and Lowell soils have a clayey subsoil. Nicholson soils have a fragipan. Crider soils have a redder subsoil than Shelbyville soils.

Typical pedon of Shelbyville silt loam, 2 to 6 percent slopes; on soil map sheet 6; about 3.6 miles northeast of Mount Sterling, 4,250 feet west of U.S. Highway 60, 2,300 feet east of Hinkston Road, 5,900 feet north of U.S. Interstate 64; east-west about 2,097,350 feet and north-south 219,800 feet by Kentucky coordinate grid values:

Ap—0 to 9 inches; dark brown (10YR 3/3) silt loam; moderate medium granular structure; very friable; slightly acid; clear smooth boundary.

A3—9 to 18 inches; brown (7.5YR 4/4) silt loam; weak fine granular structure; very friable; slightly acid; clear smooth boundary.

B21t—18 to 30 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; medium acid; clear smooth boundary.

IIB22t—30 to 42 inches; yellowish brown (10YR 5/8) silty clay; few medium faint brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; medium acid; gradual smooth boundary.

IIB23t—42 to 55 inches; yellowish brown (10YR 5/8) clay; few fine faint light yellowish brown and common medium faint brownish yellow (10YR 6/8) mottles; moderate coarse subangular blocky structure parting to moderate fine angular blocky; very firm; medium acid; clear smooth boundary.

IIB3—55 to 65 inches; brownish yellow (10YR 6/8) clay; few fine faint olive yellow mottles; moderate coarse subangular blocky structure parting to moderate fine angular blocky; very firm; medium acid.

Thickness of the solum and depth to bedrock are greater than 60 inches. Depth to the lithologic discontinuity ranges from 24 to 48 inches. Reaction above the lithologic discontinuity ranges from neutral to strongly acid. Reaction below the lithologic discontinuity ranges from strongly acid to mildly alkaline.

The A horizon has hue of 10YR or 7.5YR, value of 3, and chroma of 2 or 3. Texture is silt loam. In some pedons, the A3 or B1 horizons have the same color range and texture as the B2t horizon.

The B2t horizon has hue of 10YR, or 7.5YR, values of 4 or 5, and chroma of 4 through 6. Texture is silt loam or silty clay loam.

The IIB horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 through 6, and chroma of 4 through 8. In some pedons, the IIB horizon is mottled in shades of brown, gray, or olive. Texture is silty clay or clay.

Shelocta series

The Shelocta series consists of deep, well drained soils that have moderate permeability. They formed in mixed colluvium from sandstone, siltstone, and shale. These soils are on benched, unstable side slopes and toe slopes. Slopes range from 6 to 60 percent.

Shelocta soils are on similar landforms with Bledsoe, Latham, Berks, Lenberg, Trappist, and Colyer soils. Bledsoe soils have a clayey subsoil. Latham, Berks, Lenberg, and Trappist soils are moderately deep to bedrock. Colyer soils are shallow to bedrock.

Typical pedon of Shelocta silt loam, in an area of Shelocta-Berks complex, 20 to 60 percent slopes; on soil map sheet 17; about 4.3 miles south of Jeffersonville, 400 feet east of Kentucky Highway 213, 6,000 feet west of Sid Calk Lake; east-west (north system) about 2,110,350 feet and north-south (north system) 151,800 feet by Kentucky coordinate grid values:

01—4 to 2 inches; recent forest litter from hardwoods.

02—2 inches to 0; very dark grayish brown (10YR 3/2) partly decomposed forest litter.

A1—0 to 6 inches; brown (10YR 4/3) silt loam; weak medium granular structure; very friable; many fine, medium and common coarse roots; 5 percent siltstone channers; slightly acid; abrupt wavy boundary.

B1—6 to 15 inches; light yellowish brown (10YR 6/4) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; 10 percent siltstone channers; strongly acid; clear wavy boundary.

B21t—15 to 20 inches; yellowish brown (10YR 5/8) silt loam; moderate medium subangular blocky structure parting to weak fine subangular blocky; friable; common fine roots; thin patchy strong brown (7.5YR 5/6) clay films; 10 percent siltstone channers; strongly acid; clear wavy boundary.

B22t—20 to 28 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure parting to moderate fine angular and subangular blocky; friable; common fine roots; common clay films; 10 percent siltstone channers; strongly acid; clear wavy boundary.

B23t—28 to 52 inches; strong brown (7.5YR 5/8) channery silty clay loam; common medium distinct light yellowish brown (2.5Y 6/4) mottles; moderate medium subangular blocky structure parting to moderate fine angular blocky; firm; few fine roots; common yellowish red (5YR 4/6) clay films; 20 percent siltstone channers; very strongly acid; clear wavy boundary.

B3—52 to 65 inches; yellowish brown (10YR 5/8) channery silty clay loam; common fine faint light yellowish brown and few fine distinct light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure parting to weak fine subangular blocky; firm; few thin yellowish red (5YR 4/6) clay films; 25 percent siltstone channers; very strongly acid.

Thickness of the solum ranges from 40 to more than 60 inches. Depth to bedrock ranges from 60 to more than 120 inches. Content of coarse fragments ranges from 5 to 35 percent in the solum and from 5 to 70 percent in the C horizon. The soil ranges from very strongly acid to slightly acid in the A horizon, and it is strongly acid or very strongly acid in the B and C horizons.

The A horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 through 5, and chroma of 2 through 4. Texture is silt loam.

The B horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 through 6, and chroma of 4 through 8. In some pedons, the B horizon is mottled in shades of brown, red, and gray. Texture is silt loam, silty clay loam, or their channery or shaly analogs. In some pedons below a depth of 40 inches, a IIB horizon formed in residuum from shale and siltstone.

The C horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 2 through 6. Mottles are in shades of brown, olive, and gray. Texture is silt loam, silty clay loam, or loam, or their channery, shaly, very channery, or very shaly analogs. Some pedons have a IIC horizon that formed in residuum from shale and siltstone.

Shrouts Series

The Shrouts series consists of moderately deep, well drained soils that have slow permeability. They formed in residuum from calcareous shale interbedded with dolomitic siltstone. These soils are on hillsides. Slopes range from 12 to 35 percent.

Shrouts soils are on similar landforms with Brassfield and Beasley soils. Brassfield soils have a fine-loamy control section, and Beasley soils are deep to bedrock.

Typical pedon of Shrouts silty clay loam, in an area of Brassfield-Shrouts-Beasley Complex, 12 to 35 percent slopes, eroded; on soil map sheet 12; about 4.2 miles southeast of Mount Sterling, 750 feet south of Greenbrier Road, 4,550 feet east of U.S. Highway 460; east-west about 2,103,350 feet and north-south 186,500 feet by Kentucky coordinate grid values:

Ap—0 to 4 inches; brown (10YR 4/3) silty clay loam; moderate fine granular structure; firm; many fine roots; neutral; clear smooth boundary.

B21t—4 to 9 inches; olive (5Y 5/4) silty clay; few fine distinct light olive gray (5Y 6/2) mottles; weak coarse subangular blocky structure parting to weak fine angular blocky; very firm; common fine roots; common brown (10YR 4/3) coatings on ped faces; few white calcium carbonate concretions; neutral; clear smooth boundary.

B22t—9 to 22 inches; pale olive (5Y 6/4) silty clay; common medium distinct greenish gray (5BG 6/1) and many fine distinct olive yellow (2.5Y 6/6) mottles; moderate medium subangular and angular blocky structure; very firm; common fine roots; few white calcium carbonate concretions; neutral; gradual smooth boundary.

B3—22 to 34 inches; olive (5Y 5/4) silty clay; common medium distinct greenish gray (5BG 6/1) and common fine distinct olive yellow (2.5Y 6/6) mottles; moderate coarse subangular blocky structure parting to weak medium angular blocky; firm; common very fine roots; common white powdery patches of calcium carbonate; neutral; gradual smooth boundary.

C—34 to 38 inches; greenish gray (5BG 6/1) silty clay; common medium distinct olive yellow (2.5Y 6/6) mottles; relic platy shale structure; very firm; common powdery patches of calcium carbonate; mildly alkaline; clear smooth boundary.

Cr—38 to 45 inches; olive (5Y 5/4) soft calcareous shale.

Thickness of the solum and depth to bedrock range from 20 to 40 inches. Content of coarse fragments ranges from 0 to 10 percent in the solum and from 0 to 25 percent in the C horizon. The soil ranges from strongly acid to moderately alkaline. The soil in the C horizon ranges from neutral to moderately alkaline.

The A horizon has hue of 10YR, 2.5Y, or 5Y, value of 3 through 6, and chroma of 1 through 3. Texture is silty clay loam.

The B horizon has hue of 2.5Y, 5Y, 5BG, or 5GY, value of 5 or 6, and chroma of 1 through 6. Texture is silty clay or clay. In some pedons, there are thin layers of silty clay loam.

The C horizon has hue of 2.5Y, 5Y, 5BG, 5GY, or N, value of 4 through 6, and chroma of 0 through 6. Texture is silty clay, clay, or their shaly analogs.

Stendal Series

The Stendal series consists of deep, somewhat poorly drained soils that have moderate permeability. They formed in acid alluvium washed from upland soils of siltstone, shale, and sandstone origin. These soils are on flood plains and are subject to frequent flooding, mainly in winter and spring. Slopes range from 0 to 3 percent.

Stendal soils are on similar landforms with Cuba, Morehead, Peoga, Tyler, and Tilsit soils. Cuba soils are well drained. Peoga and Morehead soils are on stream terraces. Tyler and Tilsit soils have a fragipan.

Typical pedon of Stendal silt loam, frequently flooded; on soil map sheet 16; about 2.7 miles east of Jeffersonville; 2,000 feet north of U.S. Highway 460, 1,900 feet west of Science Ridge Road; east-west (north system) about 2,122,750 feet and north-south (north system) 173,000 feet by Kentucky coordinate grid values:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; many fine faint grayish brown mottles; moderate fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

B2g—8 to 24 inches; grayish brown 10YR 5/2) silt loam; few fine distinct gray (N 5/0) and many fine distinct brown (10YR 4/3) mottles; moderate coarse subangular blocky structure parting to weak medium subangular blocky; friable; many fine roots; strongly acid, gradual smooth boundary.

B3g—24 to 34 inches; grayish brown (10YR 5/2) silt loam; many fine and medium distinct brown (10YR 4/3) and few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual smooth boundary.

C1g—34 to 54 inches; grayish brown (2.5Y 5/2) silt loam; common fine faint brown and common fine distinct yellowish brown (10YR 5/6) mottles; friable; few fine roots; strongly acid; gradual smooth boundary.

C2g—54 to 65 inches; olive gray (5Y 5/2) silt loam; few fine distinct gray (N 5/0) and common fine faint light olive brown (2.5Y 5/4) mottles; few fine roots; strongly acid.

Thickness of the solum ranges from 24 to 50 inches. Depth to bedrock is greater than 6 feet. Except where limed, the soil is strongly acid or very strongly acid throughout.

The A horizon has hue of 10YR, value of 4 through 6, and chroma of 2 or 3. Texture is silt loam.

The B horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 1 through 3. Texture is silt loam or silty clay loam.

The C horizon has hue of 10YR, 2.5Y, 5Y, value of 4 through 6, and chroma of 1 through 3, and has mottles of higher chroma. Texture is silt loam, loam, fine sandy loam, or their gravelly analogs.

The Stendal soils in the survey area are a taxadjunct to the Stendal series, because they have a cambic horizon that is not defined in the Stendal series. The use, management, and behavior is the same as the Stendal series.

Tilsit Series

The Tilsit series consists of deep, moderately well drained soils that have a slowly permeable fragipan. They formed from loess deposits, old alluvium, or colluvium. These soils are on stream terraces, broad and narrow ridges, and short side slopes. Slopes range from 0 to 12 percent.

Tilsit soils are on similar landforms with Colyer, Trappist, Lenberg, Tyler, Morehead, Peoga, Cuba, and Stendal soils. Colyer, Trappist, and Lenberg soils are well drained and clayey. Tyler soils are somewhat poorly drained. Morehead and Peoga soils are on low stream terraces and do not have a fragipan. Cuba and Stendal soils are on flood plains.

Typical pedon of Tilsit silt loam, 0 to 6 percent slopes; on soil map sheet 16; about 1 mile east of Jeffersonville, 1.2 miles north of U.S. Highway 460; 0.3 mile west of a gravel road; east-west (north system) about 2,113,500 feet and north-south (north system) 178,000 feet by Kentucky coordinate grid values:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; moderate fine and medium granular structure; very friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

B1—8 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine and medium roots; few fine pores; many slightly darker coatings; very strongly acid; clear smooth boundary.

B2t—14 to 23 inches; yellowish brown (10YR 5/6) silt loam; weak coarse subangular blocky structure parting to weak fine subangular blocky; friable; few fine roots; few fine pores; many light yellowish brown (2.5YR 6/4) silt coatings on large peds; few thin clay films on small peds; very strongly acid; clear smooth boundary.

Bx1—23 to 32 inches; yellowish brown (10YR 5/6) and light gray (2.5YR 7/2) silt loam; weak very coarse prismatic structure parting to moderate medium angular blocky, very firm, compact, and brittle; few fine roots between prisms; light gray silt coatings 2 to 5 mm thick on prisms; common discontinuous clay films on small coatings, stains, and nodules; very strongly acid; gradual smooth boundary.

Bx2—32 to 41 inches; strong brown (7.5YR 5/6) channery silty clay loam; many medium distinct light gray (2.5Y 7/2) mottles; moderate very coarse prismatic structure parting to moderate medium angular blocky; light gray silt coatings 2 to 5 mm thick between prisms; common clay films on small peds; 20 percent siltstone fragments 2 mm to 6 inches in diameter mostly coated with black stains; very strongly acid; abrupt smooth boundary.

Cr—41 to 63 inches; soft brown siltstone that has thin layers of soft gray shale.

Thickness of the solum ranges from 40 to 60 inches. Depth to soft bedrock ranges from 40 to 120 inches. Depth to the fragipan ranges from 18 to 28 inches. Content of coarse fragments ranges from 0 to 10 percent in the solum and from 10 to 50 percent in the C horizon. The soil ranges from strongly acid to extremely acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 through 4. Texture is silt loam.

The B1 and B2t horizons have hue of 2.5Y, 10YR, or 7.5YR, value of 4 through 6, and chroma of 4 through 8. In some pedons, the B2t horizon has gray mottles below the upper 10 inches. Texture is loam, silt loam, or silty clay loam.

The Bx horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 4 through 7, and chroma of 2 through 8, and has mottles of 2 or lower chroma. Texture is similar to the B2t horizon.

Some pedons have a C horizon that has the same color range as the Bx horizon. Texture is silt loam, loam, silty clay loam, or their shaly or channery analogs.

The Tilsit soils in the survey area are a taxadjunct to the Tilsit series, because they have siliceous mineralogy which is not defined for the Tilsit series. The use, management, and behavior are similar to the Tilsit series.

Trappist Series

The Trappist series consists of moderately deep, well drained soils that have moderate to moderately slow permeability. They formed in residuum from acid shale. These soils are on hillsides, narrow ridges, and toe slopes. Slopes range from 6 to 60 percent.

Trappist soils are on similar landforms with Tilsit, Colyer, Lenberg, and Shelocta soils. Tilsit soils have a fragipan. Colyer soils are shallow to bedrock. Lenberg soils have a higher base saturation and are geologically higher than Trappist soils. Shelocta soils are deep and have a fine-loamy control section.

Typical pedon of Trappist silt loam, from an area of Trappist-Colyer-Shelocta complex, 12 to 30 percent slopes, eroded; on soil map sheet 14; about 1.2 miles west from the intersection of Kentucky Highway 11 and Kentucky Highway 646 at Levee, 200 feet south of Kentucky Highway 646; east-west (north system) about 2,084,300 feet and north-south (north system) 168,400 feet by Kentucky coordinate grid values:

Ap—0 to 6 inches; brown (10YR 4/3) silty clay loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

B21t—6 to 10 inches; strong brown (7.5YR 5/6) silty clay; moderate fine subangular blocky structure; friable; common fine roots; thin patchy yellowish brown (10YR 5/4) silt coatings and thin very patchy brown (7.5YR 5/4) clay films; very strongly acid; clear smooth boundary.

B22t—10 to 20 inches; strong brown (7.5YR 5/6) silty clay; few medium distinct yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; thin continuous brown (7.5YR 5/4) clay films; 2 to 5 percent weathered shale fragments; very strongly acid; clear wavy boundary.

B3—20 to 26 inches; strong brown (7.5YR 5/6) shaly silty clay; common medium distinct red (2.5YR 4/6) and few fine distinct light brownish gray (10YR 6/2) mottles; weak very coarse platy structure parting to weak medium subangular blocky; firm; few fine roots; thin patchy brown (7.5YR 5/4) clay films; 25 percent weathered shale fragments; very strongly acid; clear smooth boundary.

Cr—26 to 55 inches; soft black acid shale.

R—55 inches; hard black acid shale.

Thickness of the solum and depth to soft shale bedrock range from 20 to 40 inches. Content of coarse fragments ranges from 0 to 35 percent in the solum, and 25 to 75 percent in the C horizon. Except where limed, the soil ranges from strongly acid to extremely acid throughout.

The A horizon has hue of 10YR or 7.5YR, value of 3 through 5, and chroma of 2 through 4. Texture is silt loam or silty clay loam.

The Bt horizon has hue of 5YR, or 10YR, value of 4 or 5, and chroma of 4 through 8. Texture is silty clay loam, silty clay, clay, or their shaly analogs.

The B3 and C horizons have the same color range as the Bt horizon. Mottles in shades of gray, red, and yellow are inherited from parent rocks. Texture is silty clay, clay, or their shaly and very shaly analogs.

The Trappist soils in the survey area are a taxadjunct to the Trappist series, because they are underlain by soft shale at depths of 20 to 40 inches rather than hard shale. This is outside the range of the Trappist series; however, the use, management, and behavior are similar to the Trappist series.

Tyler Series

The Tyler series consists of deep, somewhat poorly drained soils that have a slowly permeable fragipan. They formed in colluvium and old alluvium washed from upland soils of acid shale siltstone and sandstone origin. These soils are on broad ridges and stream terraces. Slopes range from 0 to 3 percent.

Tyler soils are on similar landforms with Cuba, Stendal, Tilsit, Morehead, and Peoga soils. Cuba and Stendal soils are on flood plains. Tilsit soils are moderately well drained. Morehead and Peoga soils do not have a fragipan.

Typical pedon of Tyler silt loam, on soil map sheet 15; about 0.8 mile south of Camargo, 1,250 feet south of the filtration plant lake dam; east-west (north system) about 2,103,450 feet and north-south (north system) 176,250 feet by Kentucky coordinate grid values:

Ap—0 to 9 inches; brown (10YR 5/3) silt loam, common fine faint grayish brown mottles; moderate fine and medium granular structure; very friable; many fine roots; 7 percent small pebbles as much as 1 inch in diameter; very strongly acid; abrupt smooth boundary.

B21t—9 to 17 inches brownish yellow (10YR 6/6) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular structure; friable; common fine roots; few thin clay films; 6 percent pebbles as much as 1 inch in diameter; very strongly acid; clear smooth boundary.

B22t—17 to 24 inches; brown (10YR 5/3) silt loam, many medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores, few thin clay films; 9 percent pebbles as much as 1 inch in diameter; very strongly acid; clear wavy boundary.

Bx1—24 to 37 inches; light brownish gray (10YR 6/2) silt loam; many medium distinct yellowish brown (10YR 5/4) mottles; moderate coarse prismatic structure; firm, compact, and brittle; few fine roots between prisms; light brownish gray (10YR 6/2) silt coatings; 7 percent pebbles as much as 1 inch in diameter; very strongly acid; gradual smooth boundary.

Bx2—37 to 53 inches; light brownish gray (10YR 6/2) silt loam; many medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) mottles; moderate very coarse prismatic structure; very firm, compact, and brittle; light brownish gray (10YR 6/2) silt coatings; 6 percent pebbles as much as 1 inch in diameter; very strongly acid; clear smooth boundary.

Bx3—53 to 67 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct light brownish gray (2.5Y 6/2) mottles; moderate very coarse prismatic structure; very firm, compact, and brittle; light brownish gray (2.5Y 6/2) silt coatings; 7 percent pebbles as much as 1 inch in diameter; very strongly acid; abrupt smooth boundary.

Cr—67 to 80 inches; black and gray shale in 2 to 3 inch layers; extremely acid; clear smooth boundary.

R—80 inches; black fissile shale.

Thickness of the solum ranges from 40 to 80 inches. Depth to bedrock ranges from 48 to more than 120 inches. Depth to the fragipan ranges from 15 to 30 inches. Except where limed, the soil is strongly acid to extremely acid throughout.

The A horizon has hue of 10YR, 2.5Y, or 5Y, value of 3 through 6, and chroma of 1 through 3. Texture is silt loam.

The B horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or more. Mottles are common to many with chroma of 2 or less. Texture is silt loam or silty clay loam.

The Bx horizon has hue of 10YR through 5Y, value of 5 or 6, and chroma of 2 through 8. Mottles may have value of 7 and chroma of 1. Texture is silt loam or silty clay loam.

In some pedons, the C horizons has the same color range and texture as the Bx horizon.

The Tyler soils in the survey area are a taxadjunct to the Tyler series, because they have a coarse-loamy control section with about 15 percent clay and 19 percent sand coarser than very fine. These are outside the range of the Tyler series; however, the use, management, and behavior are similar to the Tyler series.

Woolper Series

The Woolper series consists of deep, well drained soils that have moderately slow to slow permeability. They formed in colluvium from upland soils of limestone, calcareous shale, and siltstone origin. These soils are on toe slopes and stream terraces. Slopes range from 2 to 8 percent.

Woolper soils are on similar landforms with Huntington, Boonesboro, Elk, Otwell, and Sees soils. Huntington and Boonesboro soils are on flood plains. Elk and Otwell soils have a fine-silty control section. Sees soils are moderately well drained and somewhat poorly drained.

Typical pedon of Woolper silty clay loam, 2 to 8 percent slopes; on soil map sheet 12; about 3.9 miles southeast of Mount Sterling, 5,900 feet southeast from the intersection of Kentucky Highway 646 and Kentucky Highway 713, 125 feet south of Kentucky Highway 713; east-west about 2,107,000 feet and north-south 193,400 feet by Kentucky coordinate grid values:

Ap—0 to 10 inches; dark brown (10YR 3/3) silty clay loam; moderate medium granular structure and moderate very fine angular blocky; firm; many fine and many medium roots; neutral; clear smooth boundary.

B21t—10 to 23 inches; dark brown (10YR 3/3) silty clay; strong medium angular blocky structure parting to strong very fine angular blocky; very firm; common fine roots; common clay films; neutral; gradual smooth boundary.

B22t—23 to 41 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium angular blocky structure parting to moderate fine angular blocky; very firm; few fine roots; common clay films; dark brown (10YR 3/3) coatings on ped faces; neutral; gradual smooth boundary.

B23t—41 to 53 inches; dark yellowish brown (10YR 4/4) silty clay; few medium distinct light yellowish brown (2.5Y 6/4) and few fine faint yellowish brown mottles; weak and moderate medium subangular blocky structure; very firm; few fine roots; common thin clay films; neutral; gradual smooth boundary.

C—53 to 60 inches; dark yellowish brown (10YR 4/4) silty clay; few medium distinct light yellowish brown (2.5Y 6/4) and common fine faint yellowish brown mottles; very firm; neutral.

Thickness of the solum ranges from 40 to 60 inches. Depth to bedrock ranges from 60 to more than 100 inches. Content of coarse fragments ranges from 0 to 15 percent throughout. The soil ranges from slightly acid to mildly alkaline throughout. The mollic epipedon ranges from 10 to 24 inches thick.

The A horizon has hue of 7.5YR, or 10YR, value of 2 or 3, and chroma of 2 or 3. Texture is silty clay loam.

The B21t horizon has the same color range as the A horizon. Texture is silty clay loam, silty clay, or clay.

The B22t and B23t horizons have hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. In some pedons, the mottles have hue of 2.5Y, and value of 6. Texture is silty clay or clay.

The C horizon has the same color range and texture as the B22t and B23t horizons. Mottles are in shades of brown, gray, or olive.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well-aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Aspect (forestry). The direction toward which a slope faces. Synonym: Exposure.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 2.4
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	more than 5.2

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). The volume of soft soil decreases excessively under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A form of noninversion tillage that retains at least 30 percent cover on the soil surface throughout the year. These include no tillage, strip tillage, stubble mulching, and other types of noninversion tillage.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour farming. Plowing, cultivating, and planting in rows that are at right angles to the natural direction of the slope or that are parallel to terrace grade.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Deferred grazing. Postponing grazing or resting grazingland for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, such as fire, that exposes the surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, and clay.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 37.5 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Green-manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual.* The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

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Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Large stones (in tables). Rock fragments that are 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). There is a shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called groundwater runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-79 at Mount Sterling, Kentucky]

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	42.7	23.8	33.3	69	-9	19	4.12	2.15	5.84	9	8.4
February---	47.1	26.1	36.6	73	-3	23	3.62	1.79	5.20	8	4.7
March------	57.1	34.6	45.9	82	12	97	4.77	2.57	6.69	9	2.4
April------	69.2	44.2	56.7	87	24	221	4.08	2.20	5.73	8	.2
May--------	76.9	53.1	65.0	90	32	465	4.27	2.55	5.79	8	.0
June-------	83.2	60.9	72.1	94	45	663	4.07	2.87	5.17	8	.0
July-------	86.1	64.6	75.4	96	51	787	4.98	2.99	6.75	8	.0
August-----	85.3	63.3	74.3	95	49	753	4.04	1.69	6.02	6	.0
September--	80.0	57.0	68.5	94	38	555	3.65	1.93	5.15	6	.0
October----	69.7	45.3	57.5	87	24	254	2.26	1.18	3.24	5	.0
November---	56.6	35.3	46.0	78	12	43	2.94	1.85	3.90	7	.7
December---	46.7	28.0	37.4	70	0	20	3.94	1.93	5.68	8	1.7
Yearly:											
Average--	66.7	44.7	55.7	---	---	---	---	---	---	---	---
Extreme--	---	---	---	98	-10	---	---	---	---	---	---
Total----	---	---	---	---	---	3,900	46.74	40.47	52.70	90	18.1

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 °F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-79
at Mount Sterling, Kentucky]

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 8	April 20	May 6
2 years in 10 later than--	April 2	April 15	May 1
5 years in 10 later than--	March 23	April 5	April 21
First freezing temperature in fall:			
1 year in 10 earlier than--	October 26	October 18	October 9
2 years in 10 earlier than--	October 31	October 23	October 13
5 years in 10 earlier than--	November 10	November 2	October 22

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-79
at Mount Sterling, Kentucky]

Probability	Length of growing season if daily minimum temperature is ---		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	210	187	161
8 years in 10	217	195	168
5 years in 10	232	210	183
2 years in 10	246	225	199
1 year in 10	254	233	206

TABLE 4.--GEOLOGY AND PHYSIOGRAPHY

Geologic period	Geology formations and members	Soil series	Physiographic region
Pennsylvanian	Breathitt and Lee Formations	Latham	Mountain and Eastern Coal Fields.
Mississippian	Newman Limestone Formation	Caneyville	Mountain and Eastern Coal Fields.
	Cowbell Member of the Borden Formation.	Berks	Mountain and Eastern Coal Fields.
	Nancy and Farmers Members of the Borden Formation.	Lenberg	Knobs.
Mississippian and Devonian	New Albany Shale Formation	Colyer Trappist	Knobs.
Devonian	Boyle Dolomite Formation	Beasley	Transition Zone (more like Bluegrass than Knobs).
Silurian	Crab Orchard Formation	Beasley Shrouts Brassfield	Transition Zone (more like Bluegrass than Knobs).
Ordovician	Drakes Formation	Brassfield Beasley Shrouts	Hills of the Bluegrass.
	Ashlock Formation; Calloway Creek Formation.	Lowell Faywood	Outer Bluegrass.
	Ashlock Formation; Calloway Creek Formation; Garrard Siltstone Formation; Clays Ferry Formation.	Lowell Faywood Cynthiana Aaron	Hills of the Bluegrass.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AaB	Aaron silt loam, 2 to 6 percent slopes	300	0.2
AaC	Aaron silt loam, 6 to 12 percent slopes	1,280	1.0
BaB	Beasley silt loam, 2 to 6 percent slopes	400	0.3
BaC	Beasley silt loam, 6 to 12 percent slopes	1,890	1.5
BcF	Bledsoe-Rock outcrop-Caneyville complex, 6 to 60 percent slopes	480	0.4
BlE	Bledsoe-Shelocta complex, 12 to 35 percent slopes	840	0.6
Bo	Boonesboro silt loam, frequently flooded	950	0.7
BrC	Brassfield silty clay loam, 6 to 12 percent slopes, eroded	680	0.5
BsE	Brassfield-Shrouts-Beasley complex, 12 to 35 percent slopes, eroded	10,990	8.5
CoF	Colyer-Trappist complex, 25 to 60 percent slopes, eroded	4,820	3.7
CrB	Crider silt loam, 2 to 6 percent slopes	2,880	2.2
CrC	Crider silt loam, 6 to 15 percent slopes	3,420	2.6
Cu	Cuba silt loam, occasionally flooded	760	0.6
ElB	Elk silt loam, 2 to 6 percent slopes	360	0.3
ElC	Elk silt loam, 6 to 12 percent slopes	380	0.3
FaC	Faywood silt loam, 6 to 12 percent slopes	2,630	2.0
FaD	Faywood silt loam, 12 to 20 percent slopes	670	0.5
FcE	Faywood-Cynthiana complex, 12 to 35 percent slopes, eroded	14,790	11.3
FlE	Faywood-Lowell complex, 12 to 35 percent slopes	23,640	18.1
Hu	Huntington silt loam, occasionally flooded	2,350	1.8
LaF	Latham-Shelocta-Rock outcrop complex, 20 to 60 percent slopes	820	0.6
LeC	Lenberg silt loam, 6 to 12 percent slopes, eroded	1,000	0.8
LeD	Lenberg silt loam, 12 to 20 percent slopes, eroded	2,260	1.7
LnF	Lenberg-Shelocta complex, 20 to 50 percent slopes, eroded	5,460	4.2
LoB	Lowell silt loam, 2 to 6 percent slopes	3,450	2.6
LoC	Lowell silt loam, 6 to 12 percent slopes	9,120	7.0
LoD	Lowell silt loam, 12 to 20 percent slopes	230	0.2
Me	Melvin silt loam, frequently flooded	260	0.2
Mo	Morehead silt loam, rarely flooded	3,600	2.8
NiB	Nicholson silt loam, 2 to 8 percent slopes	2,540	1.9
OtB	Otwell silt loam, 2 to 8 percent slopes	1,670	1.3
Pe	Peoga silt loam, rarely flooded	1,210	0.9
Pt	Pits-Dumps complex	60	*
Ro	Robertsville silt loam	600	0.5
Sc	Sees silt loam, rarely flooded	310	0.2
SeB	Shelbyville silt loam, 2 to 6 percent slopes	3,030	2.3
SeC	Shelbyville silt loam, 6 to 12 percent slopes	1,810	1.4
ShC	Shelocta silt loam, 6 to 15 percent slopes	290	0.2
SlF	Shelocta-Berks complex, 20 to 60 percent slopes	5,530	4.2
St	Stendal silt loam, frequently flooded	270	0.2
TiB	Tilsit silt loam, 0 to 6 percent slopes	6,340	5.0
TiC	Tilsit silt loam, 6 to 12 percent slopes	550	0.4
TrC	Trappist silt loam, 6 to 12 percent slopes, eroded	700	0.5
TsE	Trappist-Colyer-Shelocta complex, 12 to 30 percent slopes, eroded	2,180	1.7
Ty	Tyler silt loam	2,400	1.8
WoB	Woolper silty clay loam, 2 to 8 percent slopes	290	0.2
	Water	70	0.1
	Total	130,560	100.0

* Less than 0.1 percent.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat	Tobacco	Alfalfa hay	Grass-legume hay	Pasture
		Bu	Bu	Bu	Lbs	Tons	Tons	AUM*
AaB------------- Aaron	IIe	110	35	40	2,600	4.5	4.0	8.0
AaC------------- Aaron	IIIe	100	30	35	2,300	4.0	4.0	8.0
BaB------------- Beasley	IIe	105	30	40	2,800	4.5	4.0	8.0
BaC------------- Beasley	IIIe	90	25	35	2,400	4.0	3.5	7.0
BcF:								
Bledsoe--------	VIIe	---	---	---	---	---	---	---
Rock outcrop--	VIIIs	---	---	---	---	---	---	---
Caneyville----	VIIe	---	---	---	---	---	---	---
BlE------------- Bledsoe-Shelocta	VIe	---	---	---	---	---	---	6.0
Bo-------------- Boonesboro	IIs	100	40	40	2,800	4.0	3.5	8.0
BrC------------- Brassfield	IVe	60	---	25	1,500	---	3.0	5.0
BsE------------- Brassfield-Shrouts-Beasley	VIe	---	---	---	---	---	3.0	4.5
CoF------------- Colyer-Trappist	VIIs	---	---	---	---	---	---	---
CrB------------- Crider	IIe	135	45	45	3,500	5.5	5.5	10.0
CrC------------- Crider	IIIe	110	40	45	3,200	5.0	5.0	9.5
Cu-------------- Cuba	IIw	120	40	40	---	---	3.5	9.0
ElB------------- Elk	IIe	125	45	45	3,200	5.5	4.5	9.0
ElC------------- Elk	IIIe	110	35	40	2,900	4.5	4.0	8.0
FaC------------- Faywood	IIIe	80	25	20	2,400	3.5	3.0	6.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat	Tobacco	Alfalfa hay	Grass-legume hay	Pasture
		Bu	Bu	Bu	Lbs	Tons	Tons	AUM*
FaD------------- Faywood	IVe	65	---	20	1,600	3.0	2.5	5.0
FcE------------- Faywood-Cynthiana	VIe	---	---	---	---	---	2.0	4.5
FlE------------- Faywood-Lowell	VIe	---	---	---	---	---	2.5	6.0
Hu-------------- Huntington	IIw	140	45	50	3,400	5.5	4.0	10.0
LaF: Latham----------	VIIe	---	---	---	---	---	---	---
Shelocta------	VIIe	---	---	---	---	---	---	---
Rock outcrop--	VIIIs	---	---	---	---	---	---	---
LeC------------- Lenberg	IIIe	70	---	30	2,200	---	2.5	5.0
LeD------------- Lenberg	IVe	55	---	25	2,000	---	2.0	4.0
LnF------------- Lenberg-Shelocta	VIIe	---	---	---	---	---	---	---
LoB------------- Lowell	IIe	110	35	40	3,100	5.0	4.0	9.0
LoC------------- Lowell	IIIe	100	30	35	2,600	4.5	4.0	8.5
LoD------------- Lowell	IVe	85	---	30	2,300	3.5	3.5	7.0
Me-------------- Melvin	IIIw	100	35	---	---	---	3.5	7.0
Mo-------------- Morehead	IIw	110	40	40	2,800	---	4.0	8.0
NiB------------- Nicholson	IIe	125	40	40	3,000	4.5	3.5	6.5
OtB------------- Otwell	IIe	125	40	40	2,800	4.5	3.5	7.5
Pe-------------- Peoga	IIIw	100	40	---	---	---	4.0	7.5
Pt**------------ Pits-Dumps	VIIIs	---	---	---	---	---	---	---
Ro-------------- Robertsville	IVw	75	30	---	---	---	3.0	6.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Wheat	Tobacco	Alfalfa hay	Grass-legume hay	Pasture
		Bu	Bu	Bu	Lbs	Tons	Tons	AUM*
Sc-------------- Sees	IIw	90	35	40	2,000	---	3.5	7.6
SeB------------- Shelbyville	IIe	135	40	45	3,400	5.5	4.5	9.0
SeC------------- Shelbyville	IIIe	110	35	40	2,900	5.0	4.0	8.5
ShC------------- Shelocta	IIIe	100	30	40	2,300	4.0	3.5	8.0
SlF------------- Shelocta-Berks	VIIe	---	---	---	---	---	---	---
St-------------- Stendal	IIw	130	45	---	---	---	4.5	8.0
TiB------------- Tilsit	IIe	105	35	45	2,500	---	3.5	7.0
TiC------------- Tilsit	IIIe	90	25	35	2,200	---	3.0	6.5
TrC------------- Trappist	IIIe	75	25	30	2,100	3.5	3.0	6.0
TsE------------- Trappist-Colyer-Shelocta	VIe	---	---	---	---	---	2.5	5.0
Ty-------------- Tyler	IIIw	95	35	---	---	---	3.0	7.5
WoB------------- Woolper	IIe	115	40	45	2,900	5.0	4.0	8.5

---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
AaB, AaC----------- Aaron	3c	Slight	Moderate	Slight	Moderate	Northern red--------	70	Northern red oak, white oak, white ash.
						Black locust--------	---	
						Eastern redcedar----	---	
BaB, BaC----------- Beasley	3c	Slight	Moderate	Slight	Moderate	White oak-----------	65	White oak, Virginia pine, white ash, eastern redcedar.
						Scarlet oak---------	---	
						Eastern redcedar----	---	
						Chinkapin oak-------	41	
						Hickory-------------	---	
						White ash-----------	---	
BcF*:								
Bledsoe----------- (North aspect)	1r	Severe	Severe	Slight	Severe	Yellow-poplar-------	95	Yellow-poplar, white oak, white ash, northern red oak.
						Northern red oak----	85	
						White ash-----------	---	
						Sugar maple---------	---	
						American beech------	---	
						Black walnut--------	---	
						Virginia pine-------	---	
Bledsoe----------- (South aspect)	2r	Severe	Severe	Moderate	Moderate	Yellow-poplar-------	---	White oak, eastern white pine.
						Sugar maple---------	---	
						Virginia pine-------	---	
Rock outcrop.								
Caneyville---------	3x	Severe	Severe	Slight	Moderate	Black oak-----------	69	White oak, eastern white pine, white ash.
						Yellow-poplar-------	80	
						Eastern redcedar----	45	
						White oak-----------	63	
						Chinkapin oak-------	---	
BlE*:								
Bledsoe----------- (North aspect)	1r	Moderate	Moderate	Slight	Severe	Black walnut--------	---	Yellow-poplar, white oak, white ash, northern red oak.
						Yellow-poplar-------	95	
						Northern red oak----	85	
						White ash-----------	---	
						Sugar maple---------	---	
						American beech------	---	
						Virginia pine-------	---	
Bledsoe----------- (South aspect)	2r	Moderate	Moderate	Moderate	Moderate	Yellow-poplar-------	95	Eastern white pine, white oak.
						Sugar maple---------	---	
						Virginia pine-------	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
BlE*:								
Shelocta----------- (North aspect)	2r	Moderate	Moderate	Slight	Moderate	Northern red oak----	76	Eastern white pine, yellow-poplar, black walnut, white oak, northern red oak, shortleaf pine, white ash.
						Yellow-poplar-------	102	
						Virginia pine-------	78	
						Shortleaf pine------	75	
						White oak-----------	76	
						Black oak-----------	86	
Shelocta---------- (South aspect)	3r	Moderate	Moderate	Moderate	Moderate	Northern red oak----	69	Eastern white pine, shortleaf pine, white oak.
						Virginia pine-------	71	
						Shortleaf pine------	65	
						White oak-----------	64	
Bo----------------- Boonesboro	1o	Slight	Slight	Slight	Severe	Northern red oak----	85	Eastern cottonwood, sweetgum, yellow-poplar, white ash, American sycamore.
						Yellow-poplar-------	---	
						White oak-----------	---	
						Sweetgum------------	---	
						White ash-----------	---	
						Black walnut--------	---	
						American sycamore---	---	
BrC---------------- Brassfield	4o	Slight	Slight	Moderate	Slight	Scarlet oak---------	45	Eastern redcedar, Scotch pine, Virginia pine.
						Eastern redcedar----	40	
BsE*:								
Brassfield--------	4r	Severe	Moderate	Moderate	Slight	Scarlet oak---------	55	Eastern redcedar, Virginia pine, Scotch pine.
						Eastern redcedar----	40	
Shrouts-----------	4c	Severe	Severe	Moderate	Slight	Black oak-----------	---	Eastern red cedar, Virginia pine, Scotch pine, Austrian pine, white oak.
						Scarlet oak---------	60	
						Virginia pine-------	60	
						Eastern redcedar----	45	
						White oak-----------	---	
						Hackberry-----------	---	
						Black locust--------	---	
Beasley-----------	3c	Moderate	Severe	Slight	Moderate	White oak-----------	65	White oak, black oak, Virginia pine, white ash.
						Scarlet oak---------	---	
						Eastern redcedar----	41	
						Hickory-------------	---	
						White ash-----------	---	
CoF*:								
Colyer------------ (North aspect)	4d	Severe	Severe	Severe	Slight	Chestnut oak--------	64	Chestnut oak, white oak, Virginia pine.
						Scarlet oak---------	64	
						Virginia pine-------	58	
						Black oak-----------	68	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
CoF*:								
Colyer------------ (South aspect)	5d	Severe	Severe	Severe	Slight	Chestnut oak--------	50	Virginia pine.
						Scarlet oak---------	54	
						Virginia pine-------	52	
Trappist----------	3c	Severe	Severe	Slight	Moderate	Virginia pine-------	69	Shortleaf pine, chestnut oak, Virginia pine, white oak.
						White oak-----------	58	
						Black oak-----------	58	
						Chestnut oak--------	58	
						Black oak-----------	87	
CrB, CrC----------- Crider	1o	Slight	Slight	Slight	Severe	Northern red oak----	92	Eastern white pine, Northern red oak, yellow-poplar, black walnut, white oak, white ash, shortleaf pine.
						Yellow-poplar-------	97	
						Virginia pine-------	78	
						Sugar maple---------		
						Sugar maple---------	---	
Cu----------------- Cuba	1o	Slight	Slight	Slight	Severe	Yellow-poplar-------	100	Eastern white pine, white ash, black walnut, yellow-poplar, shortleaf pine, white oak, Northern red oak.
						Virginia pine-------	77	
ElB, ElC----------- Elk	2o	Slight	Slight	Slight	Moderate	Hackberry-----------	---	Eastern white pine, white ash, yellow-poplar, black walnut, shortleaf pine, Northern red oak, white oak.
						Northern red oak----	80	
						Yellow-poplar-------	90	
						Red maple-----------	---	
FaC---------------- Faywood	3c	Slight	Moderate	Slight	Moderate	Northern red oak----	70	White oak, white ash.
						Virginia pine-------	70	
						White oak-----------	---	
						Black oak-----------	---	
FaD---------------- Faywood	3c	Moderate	Moderate	Slight	Moderate	Northern red oak----	70	White oak, white ash.
						Virginia pine-------	70	
						White oak-----------	---	
						Black oak-----------	---	
FcE*:								
Faywood------------	3c	Moderate	Moderate	Slight	Moderate	Northern red oak----	70	White oak, white ash.
						Virginia pine-------	70	
						White oak-----------	---	
						Black oak-----------	---	
Cynthiana----------	4d	Moderate	Moderate	Moderate	Slight	Eastern redcedar----	42	Eastern redcedar, Virginia pine.
						Honey locust--------	---	
						American elm--------	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
FlE*:								
Faywood-----------	3c	Moderate	Moderate	Slight	Moderate	Northern red oak----	70	White oak, white ash.
						Virginia pine-------	70	
						Black oak-----------	---	
						White oak-----------	---	
Lowell------------	2c	Moderate	Moderate	Slight	Moderate	Northern red oak----	70	Northern red oak, white oak, white ash.
						Black oak-----------	84	
						American elm--------	---	
						Virginia pine-------	80	
						White ash-----------	75	
Hu----------------- Huntington	1o	Slight	Slight	Slight	Severe	Yellow-poplar-------	95	Yellow-poplar, black walnut, shortleaf pine, eastern white pine, white ash, Northern red oak, American sycamore.
						Northern red oak----	85	
Laf*:								
Latham------------ (North aspect)	3c	Severe	Severe	Slight	Moderate	Black oak-----------	68	Chestnut oak, white oak, eastern white pine, shortleaf pine.
						White oak-----------	61	
						Yellow-poplar-------	---	
						Red maple-----------	---	
						Scarlet oak---------	---	
Latham------------ (South aspect)	4c	Severe	Severe	Moderate	Slight	Black oak-----------	---	Chestnut oak, white oak, shortleaf pine.
						White oak-----------	59	
						Red maple-----------	---	
						Scarlet oak---------	---	
Shelocta---------- (North aspect)	2r	Severe	Severe	Slight	Moderate	Northern red oak----	76	Eastern white pine, yellow-poplar, black walnut, white oak, white ash, northern red oak, shortleaf pine.
						Yellow-poplar-------	102	
						Virginia pine-------	78	
						Shortleaf pine------	75	
						White oak-----------	78	
						Black oak-----------	86	
Shelocta---------- (South aspect)	3r	Severe	Severe	Moderate	Moderate	Northern red oak----	69	Eastern white pine, white oak, shortleaf pine, chestnut oak.
						Virginia pine-------	71	
						Shortleaf pine------	65	
						White oak-----------	64	
Rock outcrop.								
LeC--------------- Lenberg	4c	Slight	Moderate	Slight	Slight	White oak-----------	59	Shortleaf pine, chestnut oak, Virginia pine, white oak.
						Virginia pine-------	60	
						Scarlet oak---------	---	
						Chestnut oak--------	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
LeD Lenberg	4c	Moderate	Moderate	Slight	Slight	White oak Virginia pine Scarlet oak Chestnut oak	59 60 --- ---	White oak, shortleaf pine, Virginia pine, chestnut oak.
LnF*:								
Lenberg (North aspect)	4c	Severe	Severe	Slight	Slight	White oak Virginia pine Scarlet oak Chestnut oak	59 60 --- ---	Shortleaf pine, chestnut oak, Virginia pine, white oak.
Lenberg (South aspect)	4c	Severe	Severe	Moderate	Slight	Chestnut oak Virginia pine White oak Scarlet oak	--- 60 59 60	Virginia pine, eastern redcedar, shortleaf pine, white oak, chestnut oak.
Shelocta (North aspect)	2r	Severe	Severe	Slight	Moderate	Northern red oak Yellow-poplar Virginia pine Shortleaf pine White oak Black oak	76 102 78 75 78 86	Eastern white pine, black oak, yellow-poplar, black walnut, white oak, shortleaf pine, white ash, northern red oak.
Shelocta (South aspect)	3r	Severe	Severe	Moderate	Moderate	White oak Northern red oak Virginia pine Shortleaf pine	64 69 71 65	White oak, shortleaf pine.
LoB, LoC Lowell	2c	Slight	Slight	Slight	Moderate	Black locust Northern red oak Black oak American elm Virginia pine White ash	--- --- 84 --- 80 75	Northern red oak, white oak, white ash.
LoD Lowell	2c	Moderate	Moderate	Slight	Moderate	Northern red oak Black oak American elm Virginia pine White ash	70 84 --- 80 75	Northern red oak, white oak, white ash.
Me Melvin	1w	Slight	Severe	Severe	Severe	Pin oak Sweetgum American sycamore	101 --- ---	Pin oak, American sycamore, sweetgum.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
Mo----------------- Morehead	2w	Slight	Moderate	Slight	Moderate	Yellow-poplar-------	80	Shortleaf pine, yellow-poplar, white oak, white ash, sweetgum, pin oak, eastern white pine.
						Shortleaf pine------	84	
						Pitch pine----------	---	
						Virginia pine-------	---	
						Red maple-----------	---	
						Pin oak-------------	---	
						Northern red oak----	---	
NiB---------------- Nicholson	2o	Slight	Slight	Slight	Moderate	Black oak-----------	76	Yellow-poplar, white oak, northern red oak, sweetgum, white ash, shortleaf pine.
						White oak-----------	72	
						Hickory-------------	---	
						Sweetgum------------	---	
						Yellow-poplar-------	---	
OtB---------------- Otwell	3o	Slight	Slight	Moderate	Moderate	White oak-----------	69	Eastern white pine, white oak, white ash, shortleaf pine.
						Yellow-poplar-------	---	
						Sugar maple---------	---	
						Southern red oak----	---	
Pe----------------- Peoga	2w	Slight	Severe	Severe	Moderate	Pin oak-------------	90	American sycamore, baldcypress, red maple, pin oak, white ash, sweetgum.
						Sweetgum------------	90	
						Yellow-poplar-------	98	
						River birch---------		
Ro----------------- Robertsville	1w	Slight	Severe	Severe	Severe	Pin oak-------------	89	Sweetgum, American sycamore, pin oak, willow oak.
						Yellow-poplar-------	100	
						Sweetgum------------	93	
						River birch---------		
Sc----------------- Sees	1w	Slight	Moderate	Slight	Severe	White oak-----------	85	White oak, yellow-poplar, white ash.
						Black walnut--------	---	
						Yellow-poplar-------	---	
						Shagbark hickory----	---	
						Elm-----------------	---	
						Hackberry-----------	---	
						Black locust--------	---	
						Eastern redcedar----	---	
SeB, SeC----------- Shelbyville	2o	Slight	Slight	Slight	Moderate	Northern red oak----	80	Eastern white pine, shortleaf pine, northern red oak, yellow-poplar, black walnut, white ash, white oak.
						Black walnut--------	---	
						Hackberry-----------	---	
						American elm--------	---	
ShC---------------- Shelocta	2o	Slight	Slight	Slight	Moderate	Northern red oak----	---	Eastern white pine, shortleaf pine, yellow-poplar, black walnut, northern red oak, white ash, white oak.
						Yellow-poplar-------	105	
						Virginia pine-------		
						Shortleaf pine------	80	
						White oak-----------	83	
						Black oak-----------	78	
						Hackberry-----------	86	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
SlF*:								
Shelocta---------- (North aspect)	2r	Severe	Severe	Slight	Moderate	White oak-----------	78	Eastern white pine, yellow-poplar, black walnut, white oak, white ash, shortleaf pine, northern red oak.
						Black oak-----------	86	
						Northern red oak----	76	
						Yellow-poplar-------	102	
						Virginia pine-------	78	
						Shortleaf pine	75	
Shelocta---------- (South aspect)	3r	Severe	Severe	Moderate	Moderate	Northern red oak----	69	Eastern white pine, chestnut oak, white oak, shortleaf pine.
						Virginia pine-------	71	
						Shortleaf pine------	65	
						White oak-----------	64	
Berks------------- (North aspect)	3f	Severe	Severe	Moderate	Moderate	Black oak-----------	70	Virginia pine, eastern white pine, white oak, chestnut oak, shortleaf pine.
						Virginia pine-------	70	
						White oak-----------	62	
						Chestnut oak--------	---	
						Scarlet oak---------	---	
Berks------------- South aspect)	4f	Severe	Severe	Severe	Slight	Black oak-----------	60	Virginia pine, shortleaf pine, white oak, chestnut oak.
						Virginia pine-------	60	
						Scarlet oak---------	---	
						Chestnut oak--------	---	
						White oak-----------	---	
St---------------- Stendal	2w	Slight	Moderate	Slight	Moderate	Pin oak-------------	90	Eastern white pine, pin oak, baldcypress, American sycamore, red maple, sweetgum, green ash.
						Sweetgum------------	85	
						Yellow-poplar-------	90	
						Virginia pine-------	90	
						River birch---------	---	
TiB, TiC---------- Tilsit	3o	Slight	Slight	Slight	Moderate	White oak-----------	64	Eastern white pine, shortleaf pine, white oak, yellow-poplar.
						Yellow-poplar-------	89	
						Virginia pine-------	70	
						Shortleaf pine------	78	
						Black oak-----------	---	
TrC--------------- Trappist	3c	Slight	Moderate	Slight	Moderate	Virginia pine-------	62	Shortleaf pine, chestnut oak, Virginia pine, white oak.
						White oak-----------	58	
						Black oak-----------	58	
						Chestnut oak--------	65	
TsE*:								
Trappist----------	3c	Moderate	Severe	Slight	Moderate	Virginia pine-------	69	Shortleaf pine, chestnut oak, Virginia pine, white oak.
						White oak-----------	58	
						Black oak-----------	58	
						Chestnut oak--------	65	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
TsE*:								
Colyer------------ (North aspect)	4d	Moderate	Moderate	Severe	Slight	Chestnut oak--------	64	White oak, chestnut oak, Virginia pine.
						Scarlet oak---------	64	
						Virginia pine-------	58	
						Black oak-----------	68	
Colyer------------ (South aspect)	5d	Moderate	Moderate	Severe	Slight	Scarlet oak---------	54	Virginia pine.
						Virginia pine-------	52	
						Chestnut oak	50	
Shelocta---------- (North aspect)	2r	Moderate	Moderate	Slight	Moderate	Northern red oak----	76	Eastern white pine, yellow-poplar, black walnut, white oak, white ash, shortleaf pine, northern red oak.
						Yellow-poplar-------	102	
						Virginia pine-------	78	
						Shortleaf pine------	75	
						White oak-----------	78	
						Black oak-----------	86	
Shelocta---------- (South aspect)	3r	Moderate	Moderate	Moderate	Moderate	Northern red oak----	69	Eastern white pine, Virginia pine, white oak, shortleaf pine, black oak.
						Virginia pine-------	71	
						Shortleaf pine------	65	
						White oak-----------	64	
Ty----------------- Tyler	2d	Slight	Moderate	Moderate	Moderate	Northern red oak----	80	White ash, yellow-poplar, eastern white pine, American sycamore.
						White oak-----------	---	
						Slippery elm--------	---	
						American beech------	---	
						White ash-----------	---	
						Sugar maple---------	---	
						American sycamore---	---	
WoB---------------- Woolper	2c	Slight	Moderate	Slight	Moderate	Northern red oak----	80	Yellow-poplar, eastern white pine, white ash, white oak, northern red oak.
						Yellow-poplar-------	90	
						Shortleaf pine------	80	
						Black walnut--------	---	
						Red maple-----------	---	
						Chinkapin oak-------	---	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AaB Aaron	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
AaC Aaron	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
BaB Beasley	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly, slope.	Slight	Slight.
BaC Beasley	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
BcF*:					
Bledsoe	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Rock outcrop.					
Caneyville	Moderate: percs slowly, depth to rock.	Moderate: slope, percs slowly, depth to rock.	Severe: slope.	Severe: erodes easily.	Severe: slope.
BlE*:					
Bledsoe	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Shelocta	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Bo Boonesboro	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
BrC Brassfield	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Severe: erodes easily.	Moderate: small stones, large stones, slope.
BsE*:					
Brassfield	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: erodes easily.	Severe: slope.
Shrouts	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Beasley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CoF*:					
Colyer	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.	Severe: droughty, slope, thin layer.
Trappist	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
CrB Crider	Slight	Slight	Moderate: slope.	Slight	Slight.
CrC Crider	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Cu Cuba	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
ElB Elk	Slight	Slight	Moderate: slope.	Slight	Slight.
ElC Elk	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
FaC Faywood	Moderate: percs slowly, slope.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope, thin layer.
FaD Faywood	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
FcE*:					
Faywood	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Cynthiana	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: erodes easily.	Severe: slope, thin layer.
FlE*:					
Faywood	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Lowell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Hu Huntington	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
LaF*:					
Latham	Severe: slope.	Severe: slope.	Severe: slope.	Severe slope, erodes easily.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LaF*:					
Shelocta	Severe:	Severe:	Severe:	Severe:	Severe:
Rock outcrop.					
LeC Lenberg	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope, thin layer.
LeD Lenberg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
LnF*:					
Lenberg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Shelocta	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LoB Lowell	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
LoC Lowell	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
LoD Lowell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Me Melvin	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Mo Morehead	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
NiB Nicholson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
OtB Otwell	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight	Moderate: wetness.
Pe Peoga	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pt*:					
Pits.					
Dumps.					
Ro Robertsville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Sc Sees	Severe: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SeB-------------------- Shelbyville	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
SeC-------------------- Shelbyville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
ShC-------------------- Shelocta	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
SlF*:					
Shelocta-------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Berks----------------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones, slope.	Severe: slope.	Severe: slope, small stones.
St--------------------- Stendal	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: flooding, wetness.	Severe: flooding.
TiB-------------------- Tilsit	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
TiC-------------------- Tilsit	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope, wetness.
TrC-------------------- Trappist	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope, thin layer.
TsE*:					
Trappist-------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Colyer---------------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.	Severe: droughty, slope, thin layer.
Shelocta-------------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Ty--------------------- Tyler	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
WoB-------------------- Woolper	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly, slope.	Severe: erodes easily.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AaB----------------- Aaron	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AaC----------------- Aaron	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BaB----------------- Beasley	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BaC----------------- Beasley	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BcF*:										
Bledsoe------------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop-------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Caneyville---------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
BlE*:										
Bledsoe------------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Shelocta-----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Bo------------------ Boonesboro	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BrC----------------- Brassfield	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BsE*:										
Brassfield---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Shrouts------------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Beasley------------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CoF*:										
Colyer-------------	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Trappist-----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
CrB----------------- Crider	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
CrC Crider	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Cu Cuba	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ElB Elk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ElC Elk	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FaC Faywood	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FaD Faywood	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FcE*:										
Faywood	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Cynthiana	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
FlE*:										
Faywood	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Lowell	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Hu Huntington	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LaF*:										
Latham	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Shelocta	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
LeC Lenberg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LeD Lenberg	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LnF*:										
Lenberg	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Shelocta	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
LoB---------------- Lowell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoC---------------- Lowell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LoD---------------- Lowell	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Me----------------- Melvin	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Mo----------------- Morehead	Fair	Good	Good	Good	---	Fair	Poor	Good	Good	Poor.
NiB---------------- Nicholson	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OtB---------------- Otwell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Pe----------------- Peoga	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Pt*:										
Pits---------------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Dumps--------------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Ro----------------- Robertsville	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
Sc----------------- Sees	Fair	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
SeB---------------- Shelbyville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SeC---------------- Shelbyville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ShC---------------- Shelocta	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SlF*:										
Shelocta-----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Berks--------------	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
St----------------- Stendal	Fair	Good	Fair	Good	Good	Good	Fair	Fair	Good	Fair.
TiB---------------- Tilsit	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
TiC: Tilsit	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TrC: Trappist	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TsE*:										
Trappist	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Colyer	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Shelocta	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ty: Tyler	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
WoB: Woolper	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation.]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AaB--------------- Aaron	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Moderate: wetness.
AaC--------------- Aaron	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
BaB--------------- Beasley	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: slope, shrink-swell.	Severe: low strength.	Slight.
BaC--------------- Beasley	Moderate: slope, too clayey.	Moderate: slope, shrink-swell.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
BcF*:						
Bledsoe-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
Rock outcrop.						
Caneyville--------	Severe: depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
BlE*:						
Bledsoe-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
Shelocta----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bo---------------- Boonesboro	Severe: depth to rock.	Severe: flooding.	Severe: flooding, depth to rock.	Severe: flooding.	Severe: flooding.	Severe: flooding.
BrC--------------- Brassfield	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, thin layer.
BsE*:						
Brassfield--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Shrouts-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BsE*:						
Beasley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
CoF*:						
Colyer	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, low strength, slope.	Severe: droughty, slope, thin layer.
Trappist	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
CrB Crider	Slight	Slight	Slight	Moderate: slope.	Severe: low strength.	Slight.
CrC Crider	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
Cu Cuba	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, low strength.	Moderate: flooding.
ElB Elk	Slight	Slight	Slight	Moderate: slope.	Severe: low strength.	Slight.
ElC Elk	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
FaC Faywood	Severe: depth to rock.	Moderate: slope, depth to rock, shrink-swell.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Moderate: slope, thin layer.
FaD Faywood	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
FcE*:						
Faywood	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
Cynthiana	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, low strength, slope.	Severe: slope, thin layer.
FlE*:						
Faywood	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
Lowell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Hu---------------- Huntington	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
LaF*:						
Latham-----------	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Shelocta---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
LeC--------------- Lenberg	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, thin layer.
LeD--------------- Lenberg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
LnF*:						
Lenberg----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Shelocta---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LoB--------------- Lowell	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
LoC--------------- Lowell	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
LoD--------------- Lowell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Me---------------- Melvin	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Mo---------------- Morehead	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
NiB--------------- Nicholson	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OtB: Otwell	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: low strength.	Moderate: wetness.
Pe: Peoga	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Pt*:						
Pits.						
Dumps.						
Ro: Robertsville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Sc: Sees	Severe: wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: low strength.	Moderate: wetness.
SeB: Shelbyville	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Severe: low strength.	Slight.
SeC: Shelbyville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
ShC: Shelocta	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
SlF*:						
Shelocta	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Berks	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope, small stones.
St: Stendal	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
TiB: Tilsit	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.
TiC: Tilsit	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: slope, wetness.
TrC: Trappist	Severe: depth to rock.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope.	Severe: slope.	Severe: low strength.	Moderate: slope, thin layer.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
TsE*:						
Trappist	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Colyer	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, low strength, slope.	Severe: droughty, slope, thin layer.
Shelocta	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ty Tyler	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
WoB Woolper	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation.]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AaB Aaron	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness, too clayey.	Moderate: depth to rock, wetness.	Poor: too clayey, hard to pack.
AaC Aaron	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: depth to rock, wetness, too clayey.	Moderate: depth to rock, wetness, slope.	Poor: too clayey, hard to pack.
BaB Beasley	Severe: percs slowly.	Moderate: slope, depth to rock.	Severe: too clayey, depth to rock.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
BaC Beasley	Severe: percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Moderate: slope, depth to rock.	Poor: too clayey, hard to pack.
BcF*:					
Bledsoe	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey, hard to pack.
Rock outcrop.					
Caneyville	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey, slope.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, hard to pack, thin layer, slope.
BlE*:					
Bledsoe	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey, hard to pack.
Shelocta	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: slope, seepage.	Poor: slope.
Bo Boonesboro	Severe: depth to rock, poor filter, floods.	Severe: seepage, depth to rock, floods.	Severe: floods, depth to rock, seepage.	Severe: floods, depth to rock, seepage.	Poor: area reclaim, thin layer, small stones, large stones.
BrC Brassfield	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, thin layer, small stones, large stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BsE*:					
Brassfield	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, small stones, large stones.
Shrouts	Severe: percs slowly, slope, depth to rock.	Severe: slope, death to rock.	Severe: depth to rock, slope, too clayey.	Severe: slope, depth to rock.	Poor: too clayey, hard to pack, slope, thin layer, area reclaim.
Beasley	Severe: slope, percs slowly.	Severe: slope.	Severe: slope, too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey, hard to pack.
CoF*:					
Colyer	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey, slope.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, too clayey, small stones, slope, large stones.
Trappist	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, too clayey, small stones, hard to pack, large stones, slope.
CrB Crider	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Poor: too clayey, hard to pack.
CrC Crider	Moderate: slope, percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Cu Cuba	Severe: floods.	Severe: floods.	Severe: floods, depth to rock.	Severe: floods.	Good.
ElB Elk	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
ElC Elk	Moderate: slope, percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.
FaC Faywood	Severe: depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
FaD Faywood	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: slope, depth to rock, too clayey.	Severe: slope, depth to rock.	Poor: area reclaim, thin layer, too clayey, slope, hard to pack.
FcE*:					
Faywood	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: slope, depth to rock, too clayey.	Severe: slope, depth to rock.	Poor: area reclaim, thin layer, too clayey, slope, hard to pack.
Cynthiana	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, too clayey, slope, hard to pack.
FlE*:					
Faywood	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: slope, depth to rock, too clayey.	Severe: slope, depth to rock.	Poor: area reclaim, thin layer, too clayey, slope, hard to pack.
Lowell	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Hu Huntington	Severe: floods.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Fair: too clayey.
LaF*:					
Latham	Severe: depth to rock, wetness, slope, percs slowly.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, too clayey, small stones, hard to pack, large stones, slope.
Shelocta	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: slope, seepage.	Poor: slope.
Rock outcrop.					
LeC Lenberg	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LeD----------------- Lenberg	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, hard to pack, thin layer, slope.
LnF*:					
Lenberg------------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, too clayey, slope, hard to pack.
Shelocta-----------	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: slope, seepage.	Poor: slope.
LoB----------------- Lowell	Severe: percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
LoC----------------- Lowell	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
LoD----------------- Lowell	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Me------------------ Melvin	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods. wetness.	Poor: wetness.
Mo------------------ Morehead	Severe: wetness.	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
NiB----------------- Nicholson	Severe: wetness, percs slowly.	Severe: wetness, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
OtB----------------- Otwell	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Pe------------------ Peoga	Severe: wetness, percs slowly.	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Pt*:					
Pits.					
Dumps.					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ro------------------- Robertsville	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Sc------------------- Sees	Severe: wetness, percs slowly.	Severe: wetness, floods.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness, hard to pack.
SeB------------------ Shelbyville	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight------------	Fair: too clayey, small stones, large stones.
SeC------------------ Shelbyville	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope, large stones.
ShC------------------ Shelocta	Moderate: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: too clayey, area reclaim, small stones, slope, thin layer.
SlF*:					
Shelocta------------	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: slope, seepage.	Poor: slope.
Berks----------------	Severe: depth to rock, slope.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: seepage, slope, depth to rock.	Poor: small stones, slope, thin layer, area reclaim, large stones.
St------------------- Stendal	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
TiB------------------ Tilsit	Severe: percs slowly, wetness.	Severe: wetness.	Severe: depth to rock, wetness.	Moderate: wetness, depth to rock.	Fair: area reclaim, thin layer, too clayey, wetness.
TiC------------------ Tilsit	Severe: percs slowly, wetness.	Severe: slope, wetness.	Severe: depth to rock, wetness.	Moderate: slope, wetness, depth to rock.	Fair: slope, wetness, too clayey, thin layer, area reclaim.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TrC----------------- Trappist	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, thin layer, too clayey, small stone, hard to pack, large stones.
TsE*: Trappist-----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, too clayey, small stones, hard to pack, slope, large stones.
TsE*: Colyer-------------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey, slope.	Severe: depth to rock, slope.	Poor: area reclaim, thin layer, too clayey, small stones, slope, large stones.
Shelocta-----------	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: slope, seepage.	Poor: slope.
Ty------------------ Tyler	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
WoB----------------- Woolper	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation.]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AaB, AaC Aaron	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
BaB, BaC Beasley	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
BcF*:				
Bledsoe	Poor: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Rock outcrop.				
Caneyville	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
BlE*:				
Bledsoe	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Shelocta	Fair: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Bo Boonesboro	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
BrC Brassfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, thin layer, slope.
BsE*:				
Brassfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Shrouts	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Beasley	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
CoF*:				
Colyer	Poor: area reclaim, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, thin layer, slope, small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
CoF*:				
Trappist	Poor: area reclaim, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey, small stones.
CrB Crider	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
CrC Crider	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Cu Cuba	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
ElB Elk	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
ElC Elk	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
FaC Faywood	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
FaD Faywood	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
FcE*:				
Faywood	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
Cynthiana	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, too clayey, thin layer, slope.
FlE*:				
Faywood	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
Lowell	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Hu Huntington	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
LaF*:				
Latham	Poor: area reclaim, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
LaF*:				
Shelocta	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
LeC Lenberg	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
LeD Lenberg	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
LnF*:				
Lenberg	Poor: area reclaim, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Shelocta	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
LoB, LoC Lowell	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LoD Lowell	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, too clayey, slope.
Me Melvin	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Mo Morehead	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
NiB Nicholson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
OtB Otwell	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Pe Peoga	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Pt*:				
Pits.				
Dumps.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ro-------------------- Robertsville	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Sc-------------------- Sees	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
SeB------------------- Shelbyville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
SeC------------------- Shelbyville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
ShC------------------- Shelocta	Fair: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
SlF*:				
Shelocta-------------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Berks----------------	Poor: slope, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
St-------------------- Stendal	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
TiB------------------- Tilsit	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
TiC------------------- Tilsit	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.
TrC------------------- Trappist	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, small stones, too clayey.
TsE*:				
Trappist-------------	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey, thin layer, small stones.
Colyer---------------	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope, thin layer.
Shelocta-------------	Fair: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ty-------------------- Tyler	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
WoB------------------- Woolper	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation.]

Map symbol and soil name	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Terraces and diversions	Grassed waterways
AaB Aaron	Moderate: depth to rock, slope.	Moderate: hard to pack, thin layer.	Percs slowly, slope.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
AaC Aaron	Moderate: depth to rock.	Moderate: hard to pack, thin layer.	Percs slowly, slope.	Slope, erodes easily, wetness, percs slowly.	Slope, erodes easily, percs slowly.
BaB Beasley	Moderate: depth to rock.	Moderate: thin layer.	Deep to water, slope.	Erodes easily	Erodes easily.
BaC Beasley	Moderate: depth to rock.	Moderate: thin layer.	Deep to water, slope.	Slope, erodes easily.	Slope, erodes easily.
BcF*:					
Bledsoe	Severe: slope.	Moderate: hard to pack.	Deep to water, slope.	Slope, erodes easily.	Slope, erodes easily.
Rock outcrop.					
Caneyville	Severe: slope.	Severe: thin layer, hard to pack.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
BlE*:					
Bledsoe	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Shelocta	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope.
Bo Boonesboro	Severe: seepage.	Severe: thin layer, piping.	Deep to water	Depth to rock	Depth to rock.
BrC Brassfield	Moderate: seepage, depth to rock.	Severe: piping.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
BsE*:					
Brassfield	Severe: slope.	Severe: piping.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Shrouts	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope, percs slowly, large stone, erodes easily, depth to rock.	Large stones, slope, percs slowly, erodes easily, depth to rock.
Beasley	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Terraces and diversions	Grassed waterways
CoF*:					
Colyer	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, erodes easily, percs slowly.	Slope, erodes easily, droughty, percs slowly.
Trappist	Severe: slope.	Severe: thin layer.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
CrB Crider	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Favorable.
CrC Crider	Moderate: seepage.	Severe: piping.	Deep to water	Slope	Slope.
Cu Cuba	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily.	Erodes easily.
ElB Elk	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily.	Erodes easily.
ElC Elk	Moderate: seepage.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
FaC, FaD Faywood	Moderate: depth to rock.	Severe: thin layer, hard to pack.	Deep to water	Slope, depth to rock, erodes easily. percs slowly.	Slope, erodes easily, depth to rock, percs slowly.
FcE*:					
Faywood	Severe: slope.	Severe: thin layer, hard to pack.	Deep to water	Slope, depth to rock, erodes easily, percs slowly.	Slope, erodes easily, depth to rock, percs slowly.
Cynthiana	Severe: depth to rock, slope.	Severe: hard to pack, thin layer.	Deep to water	Slope, large stones, depth to rock.	Large stones, slope, erodes easily.
FlE*:					
Faywood	Severe: slope.	Severe: thin layer, hard to pack.	Deep to water	Slope, depth to rock, erodes easily, percs slowly.	Slope, erodes easily, depth to rock, percs slowly.
Lowell	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Hu Huntington	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Favorable.
LaF*:					
Latham	Severe: slope.	Severe: thin layer.	Percs slowly, depth to rock, slope.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Shelocta	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope.
Rock outcrop.					

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Terraces and diversions	Grassed waterways
LeC, LeD---------- Lenberg	Moderate: depth to rock.	Moderate: thin layer, hard to pack.	Deep to water----	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
LnF*:					
Lenberg----------	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water----	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Shelocta---------	Severe: slope.	Severe: piping.	Deep to water----	Slope------------	Slope.
LoB--------------- Lowell	Moderate: depth to rock.	Moderate: hard to pack.	Deep to water----	Erodes easily----	Erodes easily.
LoC, LoD---------- Lowell	Moderate: depth to rock.	Severe: hard to pack.	Deep to water----	Slope, erodes easily.	Slope, erodes easily.
Me---------------- Melvin	Moderate: seepage.	Severe: piping, wetness.	Flooding---------	Erodes easily, wetness.	Wetness, erodes easily.
Mo---------------- Morehead	Moderate: seepage.	Severe: piping, wetness.	Favorable--------	Erodes easily, wetness.	Wetness, erodes easily.
NiB--------------- Nicholson	Slight------------	Severe: piping.	Percs slowly, slope.	Erodes easily, wetness, rooting depth, percs slowly.	Erodes easily, rooting depth, percs slowly.
OtB--------------- Otwell	Moderate: seepage.	Moderate: piping.	Percs slowly, slope.	Erodes easily, rooting depth, wetness, percs slowly.	Erodes easily, rooting depth, percs slowly.
Pe---------------- Peoga	Slight------------	Severe: wetness.	Favorable--------	Erodes easily, wetness.	Wetness, erodes easily.
Pt*: Pits.					
Dumps.					
Ro---------------- Robertsville	Slight------------	Severe: piping, wetness.	Percs slowly-----	Erodes easily, wetness, rooting depth. percs slowly.	Wetness, erodes easily, rooting depth, percs slowly.
Sc---------------- Sees	Slight:	Severe: hard to pack.	Percs slowly-----	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly, wetness.
SeB--------------- Shelbyville	Moderate: seepage.	Moderate: piping.	Deep to water----	Favorable--------	Favorable.
SeC--------------- Shelbyville	Moderate: seepage.	Moderate: piping	Deep to water----	Slope------------	Slope.
ShC--------------- Shelocta	Moderate: seepage.	Severe: piping.	Deep to water----	Slope------------	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Terraces and diversions	Grassed waterways
SlF*:					
Shelocta	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope.
Berks	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, depth to rock, large stones.	Depth to rock, large stones, slope.
St Stendal	Moderate: seepage.	Severe: piping, wetness.	Flooding.	Erodes easily, wetness.	Wetness, erodes easily.
TiB Tilsit	Moderate: depth to rock, seepage.	Severe: piping.	Percs slowly, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
TiC Tilsit	Moderate: depth to rock, seepage.	Severe: piping.	Percs slowly, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
TrC Trappist	Moderate: depth to rock.	Severe: thin layer.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
TsE*:					
Trappist	Severe: slope.	Severe: thin layer.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Colyer	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, erodes easily, percs slowly.	Slope, erodes easily, droughty.
Shelocta	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope.
Ty Tyler	Slight	Severe: wetness.	Percs slowly.	Erodes easily, wetness, rooting depth, percs slowly.	Wetness, erodes easily, rooting depth, percs slowly.
WoB Woolper	Slight	Severe: hard to pack.	Deep to water	Erodes easily, percs slowly.	Erodes easily, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. Some soils may have Unified classifications and USDA textures in addition to those shown. In general, the dominant classifications and textures are shown]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AaB, AaC--------- Aaron	0-8	Silt loam--------	CL-ML, CL	A-4, A-6	0	95-100	95-100	90-100	75-95	21-36	4-15
	8-45	Silty clay loam, silty clay, clay.	CL, CH	A-7	0-5	95-100	95-100	85-100	80-100	44-71	22-40
	45-53	Clay, silty clay, channery silty clay.	CL, CH	A-7	0-10	55-100	55-100	50-100	50-95	44-66	22-39
	53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BaB, BaC--------- Beasley	0-8	Silt loam--------	ML, CL, CL-ML	A-4	0-5	90-100	85-100	80-100	75-100	25-35	4-10
	8-36	Silty clay, clay	CH, CL	A-7	0-5	90-100	85-100	85-100	75-100	45-70	20-40
	36-52	Silty clay, clay loam, channery silty clay.	CL, CH	A-7	0-10	70-100	55-100	50-100	50-95	41-65	15-35
	52-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
BcF*:											
Bledsoe---------	0-8	Silt loam--------	CL, CL-ML	A-4, A-6	0-5	85-95	80-95	70-90	50-90	20-35	5-15
	8-54	Silty clay, silty clay loam, gravelly silty clay.	CH, CL	A-7, A-6	0-15	65-95	65-95	60-90	50-90	35-60	15-35
	54-65	Gravelly silty clay loam, silty clay, clay.	CH, CL, GC, SC	A-7, A-6	0-25	60-100	55-100	55-90	50-90	35-60	15-40
Rock outcrop.											
Caneyville------	0-5	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-3	90-100	85-100	75-100	60-95	20-35	2-12
	5-20	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	20-28	Clay, silty clay	CH	A-7	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BlE*:											
Bledsoe---------	0-8	Silt loam--------	CL, CL-ML	A-4, A-6	0-5	85-95	80-95	70-90	50-90	20-35	5-15
	8-54	Silty clay, silty clay loam, gravelly silty clay.	CH, CL	A-7, A-6	0-15	65-95	65-95	60-90	50-90	35-60	15-35
	54-65	Gravelly silty clay loam, silty clay, clay.	CH, CL,	A-7, A-6	0-25	60-100	55-100	55-90	50-90	35-60	15-40

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BlE*:											
Shelocta--------	0-6	Silt loam--------	ML, CL-ML	A-4	0-5	80-95	75-95	60-95	55-90	<35	NP-10
	6-28	Silty clay loam, silt loam, channery silty clay loam.	CL, CL-ML, GC, SC	A-6, A-4	0-10	55-95	50-95	45-95	40-90	25-40	4-15
	28-65	Channery silt loam, channery silty clay loam.	GM, GC, ML, CL	A-4, A-6, A-2, A-1-B	0-15	50-85	50-75	40-70	35-65	20-40	3-20
Bo--------------- Boonesboro	0-7	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-5	90-100	85-100	80-100	70-95	25-35	4-11
	7-20	Loam, silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0-5	80-100	75-95	55-90	35-60	25-42	4-20
	20-34	Gravelly silt loam, gravelly silty clay loam, very gravelly silt loam.	GM, GC, CL, CL-ML	A-2, A-4, A-6, A-7	0-20	45-85	25-70	20-70	20-65	25-42	4-20
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BrC-------------- Brassfield	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6	0-10	85-95	70-90	70-90	55-85	<35	NP-15
	6-15	Silt loam, loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	5-15	80-90	70-90	65-90	50-85	<35	NP-15
	15-27	Very channery loam, very channery silty clay loam.	GM-GC	A-1, A-2	5-25	45-60	30-55	25-50	20-45	<35	NP-15
BsE*:											
Brassfield------	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6	0-10	85-95	70-90	70-90	55-85	<35	NP-15
	6-15	Silt loam, loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	5-15	80-90	70-90	65-90	50-85	<35	NP-15
	15-27	Very channery loam, very channery silty clay loam.	GM-GC	A-1, A-2	5-25	45-60	30-55	25-50	20-45	<35	NP-15
	27-32	Weathered bedrock.	---	A-7	---	---	---	---	---	---	---
Shrouts---------	0-4	Silty clay loam	CL	A-4, A-6,	0	100	90-100	85-100	80-100	37-48	16-25
	4-34	Clay, silty clay	CH, CL	A-7	0-10	90-100	90-100	85-100	80-100	45-65	20-40
	34-38	Clay, silty clay	CH, CL	A-7	0-20	85-100	65-100	60-100	55-100	45-70	20-40
	38-45	Weathered bedrock	---	---	---	---	---	---	---	---	---
Beasley---------	0-8	Silt loam--------	ML, CL,	A-4	0-5	90-100	85-100	80-100	75-100	25-35	4-10
	8-36	Silty clay, clay	CH, CL	A-7	0-5	90-100	85-100	85-100	75-100	45-70	20-40
	36-52	Silty clay, clay loam, cherty silty clay.	CL, CH	A-7	0-10	70-100	55-100	50-100	50-95	40-65	15-35
	52-60	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CoF*:											
Colyer	0-4	Silt loam	CL, CL-ML	A-4, A-6	0	80-100	80-95	65-95	55-90	25-40	5-15
	4-10	Shaly clay, very shaly silty clay, very shaly silty clay loam.	GC, GM	A-2, A-6, A-7	0-10	35-60	30-50	25-50	25-45	35-55	11-30
	10-16	Extremely shaly, silty clay, very shaly silty clay, very shaly silty clay loam.	GC, GM	A-2, A-6, A-7	0-15	10-60	20-50	20-50	15-45	35-55	11-30
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Trappist	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-95	20-35	2-14
	6-20	Silty clay, clay, shaly silty clay.	CL, MH, CH	A-7, A-6	0	80-100	60-100	55-100	50-95	35-60	12-30
	20-26	Very shaly clay, very shaly silty clay, shaly clay.	GC, CL, MH, CH	A-2, A-7, A-6	0-5	25-75	15-65	15-60	15-60	35-60	12-30
	26-55	Weathered bedrock.	---	---	---	---	---	---	---	---	---
CrB, CrC Crider	0-10	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	95-100	90-100	85-100	25-35	4-12
	10-28	Silt loam, silty clay loam.	CL, ML, CL-ML	A-7, A-6, A-4	0	100	95-100	90-100	85-100	25-42	4-20
	28-75	Silty clay, clay, silty clay loam.	CL, CH	A-7, A-6	0-5	85-100	75-100	70-100	60-100	35-65	15-40
Cu Cuba	0-7	Silt loam	CL, ML, CL-ML	A-4, A-6	0	100	95-100	90-100	70-90	25-35	3-12
	7-50	Silt loam	CL, ML, CL-ML	A-4	0	100	95-100	90-100	70-90	25-35	3-12
	50-65	Stratified silt loam, fine sandy loam.	CL, ML, CL-ML	A-4	0	100	90-100	75-100	50-85	15-30	2-10
ElB, ElC Elk	0-9	Silt loam	ML, CL, CL-ML	A-4	0	95-100	95-100	85-100	70-95	25-35	3-10
	9-48	Silty clay loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	85-100	75-100	25-40	5-15
	48-65	Silty clay loam, silt loam, silty clay.	ML, CL, CL-ML, CH	A-4, A-6, A-7	0	95-100	90-100	85-100	70-95	25-60	5-15
FaC, FaD Faywood	0-6	Silt loam	ML, CL, CL-ML	A-4	0-15	100	95-100	90-100	85-100	25-35	4-10
	6-33	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-15	90-100	90-100	85-100	75-100	42-70	20-45
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FcE*:											
Faywood---------	0-6	Silt loam--------	ML, CL, CL-ML	A-4	0-15	100	95-100	90-100	85-100	25-35	4-10
	6-33	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-15	90-100	90-100	85-100	75-100	42-70	20-45
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cynthiana-------	0-4	Silty clay loam	CL, CL-ML	A-6, A-7,	0-30	70-100	65-100	60-100	55-100	37-48	16-25
	4-17	Flaggy clay, flaggy silty clay, clay.	MH, CH, CL	A-7	5-30	70-100	65-100	60-100	55-100	45-75	20-45
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
FlE*:											
Faywood---------	0-6	Silt loam--------	ML, CL, CL-ML	A-4	0-15	100	95-100	90-100	85-100	25-35	4-10
	6-33	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-15	90-100	90-100	85-100	75-100	42-70	20-45
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lowell----------	0-10	Silt loam--------	ML, CL, CL-ML	A-4	0	100	95-100	90-100	85-100	22-32	4-10
	10-14	Silty clay, clay, silty clay loam.	CL, CH, MH	A-7, A-6	0	100	95-100	90-100	85-100	35-65	15-32
	14-50	Clay, silty clay	CH, MH, CL	A-7	0-20	95-100	90-100	85-100	75-100	45-75	20-40
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hu--------------- Huntington	0-7	Silt loam--------	ML, CL	A-4, A-6	0	95-100	95-100	85-100	60-95	25-40	5-15
	7-65	Silt loam, loam, silty clay loam.	ML, CL	A-4, A-6	0	95-100	95-100	85-100	60-95	25-40	5-15
LaF*:											
Latham----------	0-6	Silt loam--------	CL-ML, CL	A-4, A-6	0-5	85-100	70-100	70-100	65-90	20-35	5-12
	6-21	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-10	85-100	70-95	65-95	60-90	45-65	25-40
	21-32	Very shaly silty clay, very shaly silty clay loam.	GC	A-2, A-7	0-15	30-60	25-50	25-50	20-45	45-65	25-40
	32-40	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Shelocta--------	0-6	Silt loam--------	ML, CL-ML	A-4	0-5	80-95	75-95	60-95	55-90	<35	NP-10
	6-28	Silty clay loam, silt loam, channery silty clay loam.	CL, CL-ML, GC, SC	A-6, A-4	0-10	55-95	50-95	45-95	40-90	25-40	4-15
	28-65	Channery silt loam, channery silty clay loam.	GM, GC, ML, CL	A-4, A-6,	0-15	50-85	50-75	45-70	45-65	20-40	3-20
Rock outcrop.											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
LeC, LeD--------- Lenberg	0-3	Silt loam--------	ML, CL, CL-ML	A-4, A-6, A-7	0-5	75-100	75-100	75-95	65-90	20-45	2-22
	3-28	Silty clay loam, silty clay, gravelly clay.	CL, CH, MH	A-6, A-7	0-5	75-100	60-100	55-95	50-90	35-70	15-40
	28-33	Shaly silty clay, very shaly silty clay.	CL, CH, GC	A-7, A-2	0-10	40-80	30-70	30-70	25-65	45-70	19-40
	33-40	Weathered bedrock									
LnF*:											
Lenberg---------	0-3	Silt loam--------	ML, CL, CL-ML	A-4, A-6, A-7	0-5	75-100	75-100	75-95	65-90	20-45	2-22
	3-28	Silty clay loam, silty clay, gravelly clay.	CL, CH, MH	A-6, A-7	0-5	75-100	60-100	55-95	50-90	35-70	15-40
	28-33	Shaly silty clay, very shaly silty clay.	CL, CH, ML, MH	A-7, A-2	0-10	40-80	30-70	30-70	25-65	45-70	19-40
	33-40	Weathered bedrock	---	---	---	---	---	---	---	---	---
Shelocta--------	0-6	Silt loam--------	ML, CL-ML	A-4	0-5	80-95	75-95	60-95	55-90	<35	NP-10
	6-28	Silty clay loam, silt loam, channery silty clay loam.	CL, CL-ML,	A-6, A-4	0-10	60-95	55-95	55-95	50-90	25-40	4-15
	28-65	Channery silt loam, channery silty clay loam.	GM, GC, ML, CL	A-4, A-6	0-15	50-85	50-75	45-70	45-65	20-40	3-20
LoB, LoC, LoD---- Lowell	0-10	Silt loam--------	ML, CL, CL-ML	A-4	0	100	95-100	90-100	85-100	22-32	4-10
	10-14	Silty clay, clay, silty clay loam.	CL, CH, MH	A-7, A-6	0	100	95-100	90-100	85-100	35-65	15-32
	14-50	Clay, silty clay	CH, MH, CL	A-7	0-20	95-100	90-100	85-100	75-100	45-75	20-40
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Me--------------- Melvin	0-7	Silt loam--------	CL, CL-ML, ML	A-4	0	95-100	90-100	80-100	80-95	25-35	4-10
	7-40	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	80-95	25-40	5-20
	40-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	85-100	80-100	70-100	60-95	25-40	5-20
Mo--------------- Morehead	0-6	Silt loam--------	ML, CL, CL-ML	A-4	0	95-100	95-100	90-100	80-100	25-35	2-10
	6-35	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	85-100	25-40	5-20
	35-60	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	90-100	85-100	70-100	60-95	20-40	2-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
NiB-------------- Nicholson	0-10	Silt loam--------	ML, CL, CL-ML	A-4	0	95-100	95-100	85-100	80-95	25-35	5-10
	10-27	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4, A-7	0	95-100	85-100	85-100	80-100	25-45	5-20
	27-49	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4, A-7	0	95-100	90-100	80-100	75-95	25-45	5-20
	49-60	Silty clay, clay.	CH, CL	A-6, A-7	0-10	80-100	70-100	60-100	55-95	34-70	16-40
OtB-------------- Otwell	0-8	Silt loam--------	CL, CL-ML	A-4, A-6	0	100	100	90-100	70-95	25-35	5-15
	8-18	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6	0	100	100	90-100	70-95	25-40	5-20
	18-48	Silty clay loam, loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	85-100	65-90	35-50	20-30
	48-65	Stratified silt loam to silty clay.	CL	A-6, A-7	0	95-100	90-100	85-100	80-95	35-50	15-25
Pe--------------- Peoga	0-8	Silt loam--------	CL, CL-ML	A-4, A-6	0	100	100	90-100	70-100	25-40	5-15
	8-47	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	85-100	35-50	20-30
	47-65	Stratified silty clay loam, silt loam.	CL, ML	A-6, A-7	0	100	100	90-100	70-95	35-50	10-25
Pt*: Pits.											
Dumps.											
Ro--------------- Robertsville	0-7	Silt loam--------	ML	A-4	0	95-100	95-100	85-100	75-100	25-35	2-10
	7-28	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-100	25-45	3-20
	28-60	Silty clay loam, silt loam.	ML, CL, CL-ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-100	25-45	3-20
Sc--------------- Sees	0-6	Silt loam--------	ML, CL	A-6, A-7	0-15	90-100	90-100	80-100	70-90	30-45	12-25
	6-22	Silty clay, clay, silty clay loam.	CH, MH, CL	A-7, A-6	0-10	90-100	90-100	85-100	80-95	35-70	20-45
	22-60	Silty clay, clay, flaggy silty clay.	CH, MH, CL	A-7	0-10	90-100	90-100	85-100	75-95	45-75	25-45
SeB, SeC--------- Shelbyville	0-9	Silt loam--------	ML, CL	A-4, A-6	0	100	95-100	90-100	85-100	25-40	3-15
	9-30	Silty clay loam, silt loam.	CL	A-6, A-4, A-7	0	100	95-100	90-100	85-100	30-45	10-25
	30-65	Silty clay, clay	CH, CL	A-7	0-10	80-100	80-100	70-100	65-100	45-75	20-45
ShC-------------- Shelocta	0-6	Silt loam--------	ML, CL-ML	A-4	0-5	80-95	75-95	60-95	55-90	<35	NP-10
	6-28	Silty clay loam, silt loam, channery silty clay loam.	CL, CL-ML,	A-6, A-4	0-10	55-95	50-95	45-95	40-90	25-40	4-15
	28-65	Channery silt loam, channery silty clay loam.	GM, GC, ML, CL	A-4, A-6,	0-15	50-85	50-75	45-70	45-65	20-40	3-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SlF*:											
Shelocta	0-6	Silt loam	ML, CL-ML	A-4	0-5	80-95	75-95	60-95	55-90	<35	NP-10
	6-28	Silty clay loam, silt loam, channery silty clay loam.	CL, CL-ML, GC, SC	A-6, A-4	0-10	55-95	50-95	45-95	40-90	25-40	4-15
	28-52	Channery silt loam, channery silty clay loam, very channery clay loam.	GM, GC, ML, CL	A-4, A-6, A-2, A-1-B	0-15	40-85	35-70	25-70	20-65	20-40	3-20
Berks	0-5	Channery silt loam, very channery silt.	GM, ML, GC, CL-ML	A-2, A-4	15-30	55-85	50-75	40-70	30-70	25-36	5-10
	5-24	Channery loam, very channery silt loam.	GM, GC, ML, CL-ML	A-1, A-2, A-4	0-30	35-80	25-70	25-60	20-45	25-36	5-10
	24-37	Very channery silt loam, very channery loam, extremely channery silt loam.	GM, SM	A-1, A-2, A-4	0-40	15-60	10-50	20-40	15-35	24-38	2-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
St Stendal	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	90-100	75-90	25-40	5-15
	8-34	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	100	100	90-100	75-90	25-40	5-15
	34-65	Silt loam, silty clay loam, loam.	ML, CL, CL-ML	A-4, A-6	0	100	100	85-100	60-90	20-40	3-18
TiB, TiC Tilsit	0-8	Silt loam	ML, CL, CL-ML	A-4	0	90-100	85-100	75-100	60-100	20-35	4-15
	8-23	Silt loam, silty clay loam, loam.	CL, CL-ML, ML	A-4, A-6	0	90-100	85-100	75-100	65-100	25-40	5-20
	23-41	Silt loam, silty clay loam, loam.	CL, CL-ML, ML	A-4, A-6, A-7	0	90-100	85-100	75-100	65-100	25-45	4-25
	41-63	Weathered bedrock.	---	---	---	---	---	---	---	---	---
TrC Trappist	0-6	Silt loam	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-95	22-40	4-20
	6-20	Silty clay loam, shaly silty clay.	CL, MH, CH	A-7, A-6	0	65-100	55-100	55-100	50-95	35-60	12-30
	20-26	Very shaly clay, very shaly silty clay, shaly silty clay.	GC, CL, MH, CH	A-2, A-7, A-6	0-5	25-75	15-65	15-60	15-60	35-60	12-30
	26-55	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
TsE*:											
Trappist--------	0-6	Silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-95	20-35	4-20
	6-20	Silty clay loam, shaly silty clay, silty clay.	CL, MH, CH	A-7, A-6	0	65-100	55-100	55-100	50-95	35-60	12-30
	20-26	Very shaly clay, very shaly silty clay, shaly silty clay.	GC, CL, MH, CH	A-2, A-7, A-6	0-5	25-75	15-65	15-60	15-60	35-60	12-30
	26-55	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Colyer----------	0-4	Silt loam--------	CL, CL-ML	A-4, A-6	0	80-100	80-95	65-95	55-90	25-40	5-15
	4-10	Shaly clay, very shaly silty clay, very shaly silty clay loam.	GC, GM	A-2, A-6, A-7	0-10	35-60	30-50	25-50	25-50	35-55	11-30
	10-16	Extremely shaly silty clay, very shaly silty clay, very shaly silty clay loam.	GC, GM	A-2, A-6, A-7	0-15	10-60	5-50	5-45	5-45	35-55	11-30
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Shelocta--------	0-6	Silt loam--------	ML, CL-ML	A-4	0-5	80-95	75-95	60-95	55-90	<35	NP-10
	6-28	Silty clay loam, silt loam, channery silty clay loam.	CL, CL-ML, GC, SC	A-6, A-4	0-10	60-95	55-95	45-95	40-90	25-40	4-15
	28-65	Channery silt loam, channery silty clay loam, very channery clay loam.	GM, GC, ML, CL	A-4, A-6	0-15	50-85	50-75	45-70	45-65	20-40	3-20
Ty-------------- Tyler	0-9	Silt loam--------	ML	A-4	0	100	100	95-100	80-95	30-40	4-10
	9-24	Silty clay loam, silt loam.	CL, CL-ML, ML	A-6, A-4	0	90-100	80-100	75-100	60-100	20-35	3-15
	24-67	Silty clay loam, silt loam, clay loam.	CL, CL-ML	A-6, A-4	0	90-100	80-100	75-100	65-95	22-35	4-15
	67-80	Weathered bedrock.	---	---	---	---	---	---	---	---	---
WoB-------------- Woolper	0-10	Silty clay loam	CL	A-6, A-7	0-10	95-100	90-100	85-100	75-100	34-42	15-22
	10-53	Silty clay, clay.	CL, CH	A-7, A-6	0-10	95-100	90-100	85-100	75-100	35-65	15-40
	53-60	Clay, silty clay	CH, CL	A-7	0-10	95-100	90-100	85-100	75-100	45-75	20-45

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cc	In/hr	In/in	pH				Pct
AaB, AaC Aaron	0-8	10-27	1.20-1.40	0.6-2.0	0.19-0.23	5.1-7.8	Low	0.37	3	1-3
	8-45	35-65	1.30-1.60	0.06-0.2	0.14-0.18	5.1-7.8	Moderate	0.28		
	45-53	40-60	1.50-1.70	0.06-0.2	0.12-0.16	5.6-7.8	Moderate	0.28		
	53	---	---	---	---	---	---	---		
BaB, BaC Beasley	0-8	10-27	1.20-1.40	0.6-2.0	0.18-0.23	4.5-7.3	Low	0.43	3	.5-4
	8-36	40-60	1.30-1.55	0.2-0.6	0.12-0.18	4.5-7.3	Moderate	0.28		
	36-52	40-60	1.50-1.70	0.2-0.6	0.10-0.16	6.6-8.4	Moderate	0.28		
	52-60	---	---	---	---	---	---	---		
BcF*:										
Bledsoe	0-8	15-27	1.20-1.50	0.6-2.0	0.16-0.21	5.6-7.8	Low	0.37	4	---
	8-54	35-50	1.30-1.60	0.2-0.6	0.12-0.19	5.6-7.8	Moderate	0.32		
	54-65	30-60	1.35-1.60	0.06-0.6	0.12-0.19	5.6-7.8	Moderate	0.32		
Rock outcrop										
Caneyville	0-5	10-27	1.20-1.40	0.6-2.0	0.15-0.22	4.5-7.3	Low	0.43	3	2-4
	5-20	36-60	1.35-1.60	0.2-0.6	0.12-0.18	4.5-7.3	Moderate	0.28		
	20-28	40-60	1.35-1.60	0.2-0.6	0.12-0.18	5.6-7.8	Moderate	0.28		
	28	---	---	---	---	---	---	---		
BlE*:										
Bledsoe	0-8	15-27	1.20-1.50	0.6-2.0	0.16-0.21	5.6-7.8	Low	0.37	4	---
	8-54	35-50	1.30-1.60	0.2-0.6	0.12-0.19	5.6-7.8	Moderate	0.32		
	54-65	30-60	1.35-1.60	0.06-0.6	0.12-0.19	5.6-7.8	Moderate	0.32		
Shelocta	0-6	10-25	1.15-1.30	0.6-2.0	0.16-0.22	4.5-6.5	Low	0.32	4	.5-5
	6-28	18-34	1.30-1.55	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28		
	28-65	15-34	1.30-1.55	0.6-6.0	0.08-0.16	4.5-5.5	Low	0.17		
Bo Boonesboro	0-7	15-27	1.20-1.40	0.6-2.0	0.18-0.23	6.1-8.4	Low	0.37	3	3-5
	7-20	15-35	1.20-1.40	0.6-6.0	0.18-0.23	6.1-8.4	Low	0.24		
	20-34	15-35	1.20-1.40	6.0-20	0.06-0.12	6.1-8.4	Low	0.17		
	34	---	---	---	---	---	---	---		
BrC Brassfield	0-6	27-35	1.20-1.40	0.6-2.0	0.14-0.20	6.6-8.4	Low	0.43	2	<3
	6-15	7-35	1.20-1.45	0.6-2.0	0.14-0.20	6.6-8.4	Low	0.28		
	15-27	7-35	1.20-1.40	0.6-2.0	0.10-0.18	6.6-8.4	Low	0.28		
	27-32	---	---	---	---	---	---	---		
BsE*:										
Brassfield	0-6	27-35	1.20-1.40	0.6-2.0	0.14-0.20	6.6-8.4	Low	0.43	2	<3
	6-15	7-35	1.20-1.45	0.6-2.0	0.14-0.20	6.6-8.4	Low	0.28		
	15-27	7-35	1.20-1.40	0.6-2.0	0.10-0.18	6.6-8.4	Low	0.28		
	27-32	---	---	---	---	---	---	---		
Shrouts	0-4	27-40	1.40-1.55	0.06-0.2	0.15-0.20	5.1-8.4	Low	0.43	2	.5-3
	4-34	40-65	1.40-1.65	0.06-0.2	0.13-0.17	5.1-8.4	Moderate	0.37		
	34-38	40-65	1.40-1.80	<0.06	0.08-0.14	6.6-8.4	Moderate	0.37		
	38-45	---	---	---	---	---	---	---		
Beasley	0-8	10-27	1.20-1.40	0.6-2.0	0.18-0.23	4.5-7.3	Low	0.43	3	.5-4
	8-36	40-60	1.30-1.55	0.2-0.6	0.12-0.18	4.5-7.3	Moderate	0.28		
	36-52	40-60	1.50-1.70	0.2-0.6	0.10-0.16	6.6-8.4	Moderate	0.28		
	52-60	---	---	---	---	---	---	---		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
	In	Pct	G/cc	In/hr	In/in	pH		K	T	Pct
CoF*:										
Colyer	0-4 4-10 10-16 16	15-27 35-59 35-59 ---	1.20-1.50 1.30-1.60 1.30-1.60 ---	0.6-2.0 0.06-0.2 0.06-0.2 ---	0.15-0.21 0.03-0.10 0.03-0.10 ---	3.6-6.0 3.6-5.0 3.6-5.0 ---	Low Low Low -------------	0.37 0.17 0.17 ----	2	.5-2
Trappist	0-6 6-20 20-26 26-55	27-40 30-60 35-60 ---	1.20-1.40 1.40-1.65 1.40-1.60 ---	0.6-2.0 0.2-0.6 0.06-0.2 ---	0.15-0.23 0.08-0.18 0.05-0.12 ---	3.6-5.5 3.6-5.5 3.6-5.5 ---	Low Moderate Moderate -------------	0.32 0.28 0.24 ----	2	1-3
CrB, CrC Crider	0-10 10-28 28-75	15-27 18-35 30-60	1.20-1.40 1.20-1.45 1.20-1.55	0.6-2.0 0.6-2.0 0.6-2.0	0.19-0.23 0.18-0.23 0.12-0.18	5.1-7.3 5.1-7.3 4.5-6.5	Low Low Moderate	0.32 0.28 0.28	5	2-4
Cu Cuba	0-7 7-50 50-65	18-25 14-20 14-20	1.30-1.45 1.45-1.65 1.45-1.65	0.6-2.0 0.6-2.0 0.6-2.0	0.22-0.24 0.19-0.21 0.19-0.21	4.5-7.3 4.5-5.0 4.5-5.0	Low Low Low	0.37 0.37 0.37	5	1-3
ElB, ElC Elk	0-9 9-48 48-65	10-27 18-34 25-55	1.20-1.40 1.20-1.50 1.20-1.50	0.6-2.0 0.6-2.0 0.6-2.0	0.19-0.23 0.18-0.22 0.14-0.20	4.5-6.5 4.5-6.5 4.5-6.5	Low Low Moderate	0.37 0.28 0.28	5	.5-3
FaC, FaD Faywood	0-6 6-33 33	15-27 35-60 ---	1.30-1.40 1.35-1.45 ---	0.6-2.0 0.06-0.6 ---	0.18-0.22 0.12-0.17 ---	5.1-7.8 5.1-7.8 ---	Low Moderate -------------	0.37 0.28 ----	3	1-4
FcE*:										
Faywood	0-6 6-33 33	15-27 35-60 ---	1.30-1.40 1.35-1.45 ---	0.6-2.0 0.06-0.6 ---	0.18-0.22 0.12-0.17 ---	5.1-7.8 5.1-7.8 ---	Low Moderate -------------	0.37 0.28 ----	3	1-4
Cynthiana	0-4 4-17 17	27-40 40-60 ---	1.20-1.40 1.35-1.60 ---	0.6-2.0 0.2-0.6 ---	0.15-0.20 0.08-0.15 ---	6.1-7.8 6.1-7.8 ---	Moderate Moderate -------------	0.37 0.28 ----	2	1-4
FlE*:										
Faywood	0-6 6-33 33	15-27 35-60 ---	1.30-1.40 1.35-1.45 ---	0.6-2.0 0.06-0.6 ---	0.18-0.22 0.12-0.17 ---	5.1-7.8 5.1-7.8 ---	Low Moderate -------------	0.37 0.28 ----	3	1-4
Lowell	0-10 10-14 14-50 50	12-27 35-60 40-60 ---	1.20-1.40 1.30-1.60 1.50-1.70 ---	0.6-2.0 0.2-2.0 0.2-0.6 ---	0.18-0.23 0.13-0.19 0.12-0.17 ---	4.5-6.5 4.5-6.5 5.1-7.8 ---	Low Moderate Moderate -------------	0.37 0.28 0.28 ----	3	1-4
Hu Huntington	0-7 7-65	12-27 18-30	1.10-1.30 1.30-1.50	0.6-2.0 0.6-2.0	0.18-0.24 0.16-0.22	5.6-7.8 5.6-7.8	Low Low	0.28 0.32	5	3-6
LaF*:										
Latham	0-6 6-21 21-32 32-40	20-27 35-55 35-55 ---	1.30-1.50 1.40-1.70 1.40-1.70 ---	0.6-2.0 <0.2 <0.2 ---	0.16-0.20 0.11-0.15 0.06-0.10 ---	3.6-5.5 3.6-5.5 3.6-5.5 ---	Low Moderate Moderate -------------	0.43 0.32 0.32 ---	3	1-3
Shelocta	0-6 6-28 28-65	10-25 18-34 15-34	1.15-1.30 1.30-1.55 1.30-1.55	0.6-2.0 0.6-2.0 0.6-6.0	0.16-0.22 0.10-0.20 0.08-0.16	4.5-6.5 4.5-5.5 4.5-5.5	Low Low Low	0.32 0.28 0.17	4	.5-5
Rock outcrop		---	---	---	---	---	-------------	----	---	---

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH				Pct
LeC, LeD: Lenberg	0-3	12-27	1.30-1.50	0.6-2.0	0.18-0.23	4.5-7.3	Low	0.43	3	.5-3
	3-28	35-60	1.40-1.60	0.2-0.6	0.10-0.19	4.5-5.5	Moderate	0.37		
	28-33	40-60	1.40-1.65	0.2-0.6	0.10-0.18	4.5-5.5	Moderate	0.37		
	33	---	---	---	---	---	---	---		
LnF*:										
Lenberg	0-3	12-27	1.30-1.50	0.6-2.0	0.18-0.23	4.5-7.3	Low	0.43	3	.5-3
	3-28	35-60	1.40-1.60	0.2-0.6	0.10-0.19	4.5-5.5	Moderate	0.37		
	28-33	40-60	1.40-1.65	0.2-0.6	0.10-0.18	4.5-5.5	Moderate	0.37		
	33-40	---	---	---	---	---	---	---		
Shelocta	0-6	10-25	1.15-1.30	0.6-2.0	0.16-0.22	4.5-6.5	Low	0.32	4	.5-5
	6-28	18-34	1.30-1.55	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28		
	28-65	15-34	1.30-1.55	0.6-6.0	0.08-0.16	4.5-5.5	Low	0.17		
LoB, LoC, LoD: Lowell	0-10	12-27	1.20-1.40	0.6-2.0	0.18-0.23	4.5-6.5	Low	0.37	3	1-4
	10-14	35-60	1.30-1.60	0.2-2.0	0.13-0.19	4.5-6.5	Moderate	0.28		
	14-50	40-60	1.50-1.70	0.2-0.6	0.12-0.17	5.1-7.8	Moderate	0.28		
	50	---	---	---	---	---	---	---		
Me: Melvin	0-7	12-27	1.20-1.60	0.6-2.0	0.18-0.23	6.1-7.8	Low	0.43	5	.5-3
	7-40	12-35	1.30-1.60	0.6-2.0	0.18-0.23	6.1-7.8	Low	0.43		
	40-60	7-35	1.40-1.70	0.6-2.0	0.16-0.23	6.1-7.8	Low	0.43		
Mo: Morehead	0-6	12-27	1.20-1.50	0.6-2.0	0.19-0.23	4.5-5.5	Low	0.37	4	1-4
	6-35	18-35	1.20-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Low	0.43		
	35-60	7-40	1.20-1.50	0.6-2.0	0.15-0.22	4.5-5.5	Low	0.43		
NiB: Nicholson	0-10	12-27	1.20-1.40	0.6-2.0	0.19-0.23	4.5-6.5	Low	0.43	3	2-4
	10-27	18-35	1.40-1.60	0.6-2.0	0.18-0.22	4.5-6.5	Low	[illegible]		
	27-49	18-35	1.50-1.70	0.06-0.2	0.07-0.12	4.5-6.5	Low	0.43		
	49-60	35-60	1.40-1.60	0.06-0.6	0.07-0.12	5.1-7.8	Moderate	0.37		
OtB: Otwell	0-8	18-27	1.25-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.43	3	.5-2
	8-18	22-35	1.30-1.45	0.6-2.0	0.18-0.22	5.1-5.5	Low	0.43		
	18-48	18-30	1.60-1.80	<0.06	0.06-0.08	4.5-5.5	Low	0.43		
	48-65	20-30	1.55-1.65	0.06-0.2	0.19-0.21	5.1-5.5	Low	0.43		
Pe: Peoga	0-8	15-26	1.30-1.45	0.6-2.0	0.20-0.24	5.1-7.3	Low	0.43	4	1-3
	8-47	22-34	1.40-1.60	0.06-0.2	0.18-0.20	4.5-5.5	Moderate	0.43		
	47-65	20-34	1.40-1.60	0.06-0.2	0.19-0.21	4.5-6.0	Low	0.43		
Pt*:										
Pits.										
Dumps.										
Ro: Robertsville	0-7	12-27	1.30-1.50	0.6-2.0	0.19-0.23	3.6-5.5	Low	0.43	3	1-3
	7-28	15-35	1.40-1.60	0.6-2.0	0.18-0.22	3.6-5.5	Low	0.43		
	28-60	18-35	1.50-1.65	0.06-0.2	0.08-0.12	3.6-5.5	Low	0.43		
Sc: Sees	0-6	20-35	1.20-1.40	0.2-2.0	0.17-0.22	5.6-8.4	Low	0.37	3	2-5
	6-22	30-60	1.40-1.60	0.06-0.2	0.11-0.20	5.6-8.4	Moderate	0.28		
	22-60	40-60	1.50-1.60	0.06-0.2	0.11-0.20	5.6-8.4	Moderate	0.28		
SeB, SeC: Shelbyville	0-9	10-27	1.30-1.40	0.6-2.0	0.19-0.23	5.1-7.3	Low	0.32	4	2-5
	9-30	18-35	1.30-1.45	0.6-2.0	0.18-0.22	5.1-7.3	Low	0.37		
	30-65	40-60	1.35-1.50	0.2-0.6	0.12-0.18	5.1-7.8	Moderate	0.28		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cc	In/hr	In/in	pH				Pct
ShC	0-6	10-25	1.15-1.30	0.6-2.0	0.16-0.22	4.5-6.5	Low	0.32	4	.5-5
Shelocta	6-28	18-34	1.30-1.55	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28		
	28-65	15-34	1.30-1.55	0.6-6.0	0.08-0.16	4.5-5.5	Low	0.17		
SlF*:										
Shelocta	0-6	10-25	1.15-1.30	0.6-2.0	0.16-0.22	4.5-6.5	Low	0.32	4	.5-5
	6-28	18-34	1.30-1.55	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28		
	28-65	15-34	1.30-1.55	0.6-6.0	0.08-0.16	4.5-5.5	Low	0.17		
Berks	0-5	12-23	1.20-1.50	0.6-6.0	0.08-0.12	3.6-6.5	Low	0.17	3	---
	5-24	5-32	1.20-1.60	0.6-6.0	0.04-0.10	3.6-6.5	Low	0.17		
	24-37	5-20	1.20-1.60	2.0-6.0	0.04-0.10	3.6-6.5	Low	0.17		
	37	---	---	---	---	---	---	---		
St	0-8	12-27	1.30-1.45	0.6-2.0	0.22-0.24	4.5-6.5	Low	0.37	5	1-3
Stendal	8-34	18-35	1.45-1.65	0.6-2.0	0.20-0.22	4.5-5.5	Low	0.37		
	34-65	7-35	1.35-1.60	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.37		
TiB, TiC	0-8	10-25	1.20-1.55	0.6-2.0	0.16-0.22	3.6-5.5	Low	0.43	3	1-3
Tilsit	8-23	18-35	1.30-1.55	0.6-2.0	0.16-0.22	3.6-5.5	Low	0.43		
	23-41	18-35	1.40-1.65	0.06-0.2	0.08-0.12	3.6-5.5	Low	0.43		
	41-63	---	---	---	---	---	---	---		
TrC	0-6	12-27	1.20-1.40	0.6-2.0	0.15-0.23	3.6-5.5	Low	0.37	3	1-3
Trappist	6-20	30-60	1.40-1.65	0.2-0.6	0.08-0.18	3.6-5.5	Moderate	0.28		
	20-26	35-60	1.40-1.60	0.06-0.2	0.05-0.12	3.6-5.5	Moderate	0.24		
	26-55	---	---	---	---	---	---	---		
TsE*:										
Trappist	0-6	27-40	1.20-1.40	0.6-2.0	0.15-0.23	3.6-5.5	Low	0.37	2	.5-2
	6-20	30-60	1.40-1.65	0.2-0.6	0.08-0.18	3.6-5.5	Moderate	0.28		
	20-26	35-60	1.40-1.60	0.06-0.2	0.05-0.12	3.6-5.5	Moderate	0.24		
	26-55	---	---	---	---	---	---	---		
Colyer	0-4	15-27	1.20-1.50	0.6-2.0	0.15-0.21	3.6-5.0	Low	0.37	2	.5-2
	4-10	35-59	1.30-1.60	0.06-0.2	0.03-0.10	3.6-5.0	Low	0.17		
	10-16	35-59	1.30-1.60	0.06-0.2	0.03-0.10	3.6-5.0	Low	0.17		
	16	---	---	---	---	---	---	---		
Shelocta	0-6	10-25	1.15-1.30	0.6-2.0	0.16-0.22	4.5-6.5	Low	0.32	4	.5-5
	6-28	18-34	1.30-1.55	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28		
	28-65	15-34	1.30-1.55	0.6-6.0	0.08-0.16	4.5-5.5	Low	0.17		
Ty	0-9	14-26	1.30-1.50	0.6-2.0	0.18-0.22	3.6-6.5	Low	0.43	3	2-4
Tyler	9-24	20-33	1.40-1.60	0.2-0.6	0.16-0.20	3.6-5.5	Low	0.43		
	24-67	18-33	1.60-1.85	<0.2	0.04-0.12	3.6-5.5	Low	0.43		
	67-80	---	---	---	---	---	---	---		
WoB	0-10	27-35	1.30-1.50	0.6-2.0	0.18-0.22	6.1-7.8	Low	0.37	3	4-6
Woolper	10-53	36-50	1.30-1.55	0.2-2.0	0.13-0.19	6.1-7.8	Moderate	0.28		
	53-60	40-60	1.45-1.65	0.06-0.6	0.12-0.17	6.1-7.8	Moderate	0.28		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

"Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
AaB, AaC---------- Aaron	C	None--------	---	---	1.5-3.0	Perched	Nov-Mar	40-60	Hard	High-----	Moderate.
BaB, BaC---------- Beasley	C	None--------	---	---	>6.0	---	---	40-60	Soft	Moderate	Moderate.
BcF*:											
Bledsoe----------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Rock outcrop.											
Caneyville-------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
BlE*:											
Bledsoe----------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Shelocta---------	B	None--------	---	---	>6.0	---	---	>60	Hard	Low------	High.
Bo--------------- Boonesboro	B	Frequent----	Brief-----	Jan-Apr	>6.0	---	---	20-40	Hard	Low------	Low.
BrC-------------- Brassfield	B	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	Low.
BsE*:											
Brassfield-------	B	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	Low.
Shrouts----------	D	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	Low.
Beasley----------	C	None--------	---	---	>6.0	---	---	40-60	Soft	Moderate	Moderate.
CoF*:											
Colyer-----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	High-----	High.
Trappist---------	C	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	High.
CrB, CrC--------- Crider	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Cu--------------- Cuba	B	Occasional	Brief-----	Jan-May	>6.0	---	---	>60	---	Low------	High.
ElB, ElC--------- Elk	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
FaC, FaD---------- Faywood	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
FcE*:											
Faywood----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
Cynthiana--------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low.
FlE*:											
Faywood----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
Lowell-----------	C	None--------	---	---	>6.0	---	---	>40	Hard	High-----	Moderate.
Hu---------------- Huntington	B	Occasional	Brief-----	Dec-May	4.0-6.0	Apparent	Dec-Apr	>60	---	Low------	Moderate.
LaF*:											
Latham-----------	D	None--------	---	---	1.5-3.0	Perched	Jan-Apr	20-40	Soft	High-----	High.
Shelocta---------	B	None--------	---	---	>6.0	---	---	>60	Hard	Low------	High.
Rock outcrop.											
LeC, LeD---------- Lenberg	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate.
LnF*:											
Lenberg----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate.
Shelocta---------	B	None--------	---	---	>6.0	---	---	>60	Hard	Low------	High.
LoB, LoC, LoD----- Lowell	C	None--------	---	---	>6.0	---	---	>40	Hard	High-----	Moderate.
Me---------------- Melvin	D	Frequent----	Brief-----	Dec-May	0-1.0	Apparent	Dec-May	>60	---	High-----	Low.
Mo---------------- Morehead	C	Rare--------	---	---	0.5-1.5	Apparent	Dec-Apr	>60	---	Moderate	High.
NiB--------------- Nicholson	C	None--------	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	High-----	Moderate.
OtB--------------- Otwell	C	None--------	---	---	2.0-3.0	Perched	Jan-Apr	>60	---	Moderate	High.
Pe---------------- Peoga	C	Rare--------	---	---	0.-1.0	Apparent	Jan-May	>60	---	High-----	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
Pt*: Pits.											
Dumps.											
Ro Robertsville	D	None	---	---	0-1.0	Perched	Dec-May	>60	---	High	High.
Sc Sees	C	Rare	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	Moderate	Low.
SeB, SeC Shelbyville	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
ShC Shelocta	B	None	---	---	>6.0	---	---	>60	Hard	Low	High.
SlF*: Shelocta	B	None	---	---	>6.0	---	---	>60	Hard	Low	High.
Berks	C	None	---	---	>6.0	---	---	20-40	Hard	Low	High.
St Stendal	C	Frequent	Brief	Jan-May	1.0-3.0	Apparent	Jan-Apr	>60	---	High	High.
TiB, TiC Tilsit	C	None	---	---	1.5-2.5	Perched	Jan-Apr	>40	Soft	High	High.
TrC Trappist	C	None	---	---	>6.0	---	---	20-40	Soft	High	High.
TsE*: Trappist	C	None	---	---	>6.0	---	---	20-40	Soft	High	High.
Colyer	D	None	---	---	>6.0	---	---	8-20	Hard	High	High.
Shelocta	B	None	---	---	>6.0	---	---	>60	Hard	Low	High.
Ty Tyler	D	None	---	---	0.5-2.0	Perched	Nov-May	>60	---	High	High.
WoB Woolper	C	None	---	---	>6.0	---	---	>60	---	Moderate	Low.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS

(A dash indicates material was not detected. The Cr horizon was not sampled in these soils.)

	Total			Size class and particle diameter (mm)								Coarse fragments		
				Sand										
Soil name, report number, horizon, and depth in inches	Sand (2-0.05)	Silt (0.05-0.002)	Int. IV Clay (< 0.002)	Very coarse (2.1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Sand coarser than very fine (2-0.1)	Very fine sand plus silt (0.1-0.002)	Tex-tural class	>2 mm	2-19 mm	19-76 mm
					Pct <2 mm							Pct	Pct	Pct
Lenberg silt loam:[1] (79KY-173-5)														
Ap---------- 0- 3	3.9	75.9	20.2	0.2	0.5	0.6	0.9	1.7	2.2	77.6	Silt loam.	---	---	---
B21t-------- 3- 8	2.4	70.5	27.1	0.1	0.4	0.3	0.6	1.0	1.4	71.5	Silty clay loam.	---	---	---
B22t-------- 8-14	1.9	62.3	35.8	---	0.2	0.2	0.5	1.0	0.9	63.3	Silty clay loam.	9.9	3.3	6.6
B23t--------14-25	0.7	53.8	45.5	---	---	0.1	0.2	0.4	0.3	54.2	Silty clay.	---	---	---
C-----------25-37	3.5	64.4	32.1	0.2	0.3	0.2	0.5	2.3	1.2	66.7	Silty clay loam.	36.0	5.6	30.4
Lenberg silt loam:[2] (79KY-173-6)														
Ap---------- 0- 3	3.2	81.6	15.2	0.3	0.8	0.5	0.7	0.9	2.3	82.5	Silt loam.	---	---	---
B21t-------- 3- 7	1.0	71.5	27.5	---	0.2	0.2	0.3	0.3	0.7	71.8	Silty clay loam.	---	---	---
B22t------- 7-14	0.4	60.1	39.5	---	0.1	0.1	0.1	0.1	0.3	60.2	Silty clay. loam.	---	---	---
B23t-------14-20	0.2	59.9	39.9	---	---	---	0.1	0.1	0.2	60.0	Silty clay loam.	---	---	---
B3---------20-28	0.3	65.1	34.6	---	0.1	---	0.1	0.1	0.2	65.2	Silty clay loam.	5.0	---	5.0
C----------28-33	0.4	66.8	32.8	---	0.1	0.1	0.1	0.1	0.3	66.9	Silty clay loam.	---	---	---

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name, report number, horizon, and depth in inches	Total			Size class and particle diameter (mm)								Coarse fragments		
				Sand										
	Sand (2-0.05)	Silt (0.05-0.002)	Int. IV Clay (<0.002)	Very coarse (2.1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Sand coarser than very fine (2-0.1)	Very fine sand plus silt (0.1-0.002)	Textural class	>2 mm	2-19 mm	19-76 mm
					Pct <2 mm							Pct	Pct	Pct
Tilsit silt loam[3] (79KY-173-2)														
Ap---------- 0- 8	4.0	74.6	21.4	0.3	1.0	0.9	1.0	0.8	3.2	75.4	Silt loam.	---	---	---
B1---------- 8-14	4.1	71.4	24.5	0.4	1.3	0.9	0.9	0.6	3.5	72.0	Silt loam.	---	---	---
B2t---------14-23	7.3	71.3	21.4	1.2	2.0	1.3	1.6	1.2	6.1	72.5	Silt loam.	---	---	---
Bx1---------23-32	4.3	74.3	21.4	0.4	0.9	0.8	1.4	0.8	3.5	75.1	Silt loam.	---	---	---
Bx2---------32-41	6.7	65.4	27.9	0.6	1.2	1.1	2.0	1.8	4.9	67.2	Silty clay loam.	19.5	5.4	14.1
Tilsit silt loam:[4] (79KY-173-8)														
Ap---------- 0-10	2.2	78.0	19.8	0.1	0.3	0.3	0.3	1.2	1.0	79.2	Silt loam.	---	---	---
B2t---------10-20	2.8	79.3	17.9	0.6	0.5	0.2	0.3	1.2	1.6	80.5	Silt loam.	---	---	---
Bx1---------20-28	2.5	80.8	16.7	0.2	0.3	0.3	0.4	1.3	1.2	82.2	Silt loam.	---	---	---
Bx2---------28-43	2.8	78.5	18.7	0.2	0.3	0.6	0.3	1.4	1.4	79.9	Silt loam.	---	---	---
Bx3---------43-64	2.6	77.1	20.3	0.2	0.3	0.3	0.5	1.3	1.3	78.4	Silt loam.	---	---	---
Bx4---------64-78	2.6	72.3	25.1	0.3	0.2	0.2	0.4	1.5	1.1	73.8	Silt loam.	---	---	---
Trappist silty clay loam:[5] (79KY-173-3)														
Ap---------- 0- 6	7.1	61.4	31.5	0.6	1.9	1.3	2.0	1.3	5.8	62.7	Silty clay loam.	---	---	---
B21t-------- 6-10	3.1	46.6	50.3	0.4	0.7	0.6	0.8	0.6	2.5	47.2	Silty clay.	---	---	---
B22t--------10-20	3.8	42.5	53.7	0.4	1.0	0.7	1.0	0.7	3.1	43.2	Silty clay.	---	---	---
B3----------20-26	3.2	46.2	50.6	0.3	0.8	0.5	0.9	0.7	2.5	46.9	Silty clay.	2.4	1.3	1.1

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

	Total			Size class and particle diameter (mm)								Coarse fragments		
				Sand										
Soil name, report number, horizon, and depth in inches	Sand (2-0.05)	Silt (0.05-0.002)	Int. IV Clay (< 0.002)	Very coarse (2.1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Sand coarser than very fine (2-0.1)	Very fine sand plus silt (0.1-0.002)	Textural class	>2 mm	2-19 mm	19-76 mm
					Pct <2 mm							Pct	Pct	Pct
Trappist silty clay loam:[6] (79KY-173-4)														
Ap--------- 0- 5	5.9	63.5	30.6	0.4	1.4	1.0	1.7	1.4	4.5	64.9	Silty clay loam.	---	---	---
B21t------- 5-16	8.7	59.4	31.9	---	0.3	0.5	5.4	2.5	6.2	61.9	Silty clay loam.	---	---	---
B22t--------16-24	5.1	49.8	45.1	0.7	1.6	0.8	1.2	0.8	4.3	50.6	Silty clay.	---	---	---
C1----------24-29	2.3	51.3	46.4	0.3	0.6	0.4	0.6	0.4	1.9	51.7	Silty clay.	15.5	7.5	8.0
C2----------29-38	8.	42.9	49.0	1.7	2.6	1.3	1.6	0.9	7.2	43.8	Silty clay.	51.3	13.4	37.9

---

[1] Lenberg silt loam: 2.13 miles south of Jeffersonville, 2900 ft. northeast of Big Round Mountain, 730 ft. w of Kentucky Highway 599.

[2] Lenberg: 3.5 miles east of Jeffersonville; 1 mile north of U.S. Highway 460, 1 mile east of blacktop road. This is the typical pedon for the series in this survey area.

[3] Tilsit silt loam: 1 mile east of Jeffersonville, 1.2 miles north of U.S. Highway 460; 0.3 mile west of gravel road. This is the typical pedon for the series in this survey area. Taxadjunct to the Tilsit series because the mineralogy is siliceous rather than mixed.

[4] Tilsit silt loam: 3.5 miles east of Jeffersonville; 1 mile north of U.S. Highway 460; 0.5 mile east of paved road; 200 feet south of gravel road. Taxadjunct to the Tilsit series because the mineralogy is siliceous rather than mixed.

[5] Trappist silty clay loam: 1.2 miles west from intersection of Kentucky Highways 11 and 646 at Levee; and 200 feet south of Kentucky Highway 646. This is the typical pedon for the series in this survey area. Taxadjunct to the Trappist series because underlain by soft shale.

[6] Trappist silty clay loam: 2.07 miles northeast of Jeffersonville: 2,000 feet southeast from the intersection of Kentucky Highway 213 and Refitt Road; 450 feet south of Refitt Road. Taxadjunct to the Trappist series because underlain by soft shale, base saturation is above 35 percent.

TABLE 18.--CHEMICAL ANAYLSES OF SELECTED SOILS

[A dash indicates the element was not detected. The Cr horizon was not sampled in these soils.]

Soil name, report number, horizon, and depth in inches	pH		Extractable cations						Cation exchange capacity			Base saturation				
	H_2O (1:1)	KCl 1N (1:1)	Ca	Mg	K	Na	TEC	AA	SUM	EA	Al	AA	SUM	OM	CCE	P
			-----------Millequivalents per 100 grams of soil-----------									Pct	Pct	Pct	Pct	Ppm
Lenberg[1] silt loam: (79KY-173-5)																
Ap------ 0- 3	5.3	4.6	7.8	1.1	0.4	Tr	9.3	13.5	21.4	12.1	0.2	68.6	43.5	4.9	0.4	5.0
B21t---- 3- 8	5.1	3.7	2.6	0.9	0.2	Tr	3.7	10.8	9.3	5.6	0.4	34.2	39.7	1.9	0.1	1.5
B22t---- 8-14	4.8	3.6	1.5	1.4	0.4	---	3.3	12.1	15.4	12.1	0.2	27.3	21.5	0.9	0.1	1.5
B23t----14-25	4.7	3.5	0.9	2.9	0.3	0.1	4.1	13.3	13.1	9.0	0.1	31.0	31.5	0.7	0.1	0.5
C-------25-37	4.7	3.5	0.3	6.1	0.4	0.2	6.9	11.3	13.5	6.5	0.3	61.2	51.4	0.5	0.1	1.0
Cr------37-42	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lenberg[2] silt loam: (79KY-173-6)																
Ap------ 0- 3	4.6	3.6	0.3	0.4	0.3	0.1	1.0	10.2	12.1	11.2	0.4	9.4	7.9	3.2	0.1	4.5
B21t---- 3- 7	4.6	3.5	0.2	0.7	0.3	Tr	1.2	10.9	14.3	13.1	0.3	11.4	8.7	1.0	0.1	1.0
B22t---- 7-14	4.6	3.4	0.2	2.8	0.3	--	3.3	13.2	3.3	---	---	25.1	25.1	0.8	0.1	2.0
B23t----14-20	4.7	3.3	Tr	4.4	0.3	0.1	4.8	13.8	16.0	11.2	---	34.6	29.8	0.6	0.2	1.0
B3------20-28	4.7	3.3	Tr	4.8	0.3	0.1	5.2	12.7	15.3	10.1	0.8	41.2	34.1	0.5	0.1	1.0
C-------28-33	4.8	3.2	Tr	4.4	0.3	0.1	4.8	12.8	11.0	6.2	0.5	37.7	43.8	0.5	0.1	2.0
Cr------33-40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tilsit[3] silt loam: (79KY-173-2)																
Ap------ 0- 8	4.5	3.7	0.8	0.5	0.3	0.9	2.5	10.5	19.6	17.1	0.3	24.3	13.0	2.8	0.2	3.0
B1------ 8-14	4.9	3.6	0.2	0.5	0.3	0.7	1.7	9.0	14.4	12.7	---	19.1	11.8	0.8	0.1	2.0
B2t-----14-24	5.0	3.5	0.1	1.1	0.2	0.9	2.3	8.6	14.8	12.5	0.2	26.6	15.6	0.4	0.2	1.5
Bx1-----24-32	5.0	3.4	0.1	1.7	0.2	0.7	2.7	10.2	13.8	11.1	0.2	26.0	19.3	0.3	0.1	2.0
Bx2-----32-41	5.0	3.2	0.4	2.8	0.3	0.9	4.5	12.9	22.9	18.4	0.1	34.5	19.5	0.4	0.1	2.0
Cr------41-63	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tilsit[4] silt loam: (79KY-173-8)																
Ap------ 0-10	6.1	5.1	0.5	---	0.1	0.1	0.7	11.3	10.6	10.0	0.1	6.11	6.5	0.16	0.1	5.0
B2t-----10-20	5.6	3.9	1.5	0.1	0.1	0.1	1.7	6.3	14.1	12.4	0.4	27.7	12.3	0.3	0.1	1.0
Bx1-----20-28	5.3	3.7	0.3	0.4	0.2	0.2	1.1	5.8	7.7	6.6	0.4	18.7	14.1	0.1	0.1	0.5
Bx2-----28-43	5.2	3.6	0.4	0.5	0.2	0.1	1.3	6.8	18.8	17.5	0.4	18.8	6.8	0.1	0.1	0.5
Bx3-----43-64	4.9	3.5	0.8	0.9	0.2	0.1	2.0	8.8	18.9	16.9	0.1	22.7	10.5	0.1	0.1	1.0
Bx4-----64-78	4.9	3.5	0.8	0.8	0.2	0.1	1.9	8.5	16.1	14.2	0.2	22.2	11.7	0.1	0.2	0.5

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name, report number, horizon, and depth in inches	pH		Extractable cations					Cation exchange capacity				Base saturation				
	H_2O (1:1)	KCl 1N (1:1)	Ca	Mg	K	Na	TEC	AA	SUM	EA	Al	AA	SUM	OM	CCE	P
			Millequivalents per 100 grams of soil									Pct	Pct	Pct	Pct	Ppm
Trappist silty clay loam:[5] (79KY-173-3)																
Ap------ 0- 6	4.5	3.7	2.5	0.5	0.4	0.6	3.9	12.8	15.6	11.6	---	30.6	25.2	3.6	0.1	11.0
B21t---- 6-10	4.6	3.6	1.0	0.2	0.5	0.7	2.3	12.2	13.0	10.7	0.3	18.9	17.8	1.3	0.2	4.0
B22t----10-20	4.6	3.5	0.8	0.2	0.5	0.7	2.1	12.3	13.2	11.1	---	17.3	16.1	1.0	0.1	3.0
B3------20-26	4.5	3.5	0.5	0.2	0.5	0.8	2.0	11.9	11.0	9.1	---	16.5	17.8	0.9	0.1	2.0
Cr------26-55	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Trappist silty clay loam:[6] (79KY-173-4)																
Ap------ 0- 5	4.9	4.0	9.4	1.4	0.4	0.9	12.1	12.6	22.2	10.2	0.4	96.0	54.3	3.4	0.2	10.0
B21t---- 5-16	5.4	4.3	11.0	2.6	0.3	1.1	14.7	12.3	17.3	2.6	0.2	120.0	85.2	0.3	0.1	1.0
B22t----16-24	4.5	3.5	5.23	0.3	0.4	0.9	6.9	11.7	18.1	11.2	---	58.8	37.9	0.7	0.1	4.0
C1------24-29	4.3	3.4	4.49	0.4	0.4	1.0	6.2	10.7	16.1	9.9	---	58.1	38.6	0.6	0.1	2.5
C2------29-38	4.3	3.4	9.6	0.7	0.4	1.0	11.7	12.9	24.8	13.1	0.1	91.1	47.1	0.9	0.1	3.0
Cr------38-48	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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[1] Lenberg silt loam: 2.13 miles south of Jeffersonville, 2900 ft. northeast of Big Round Mountain, 730 ft. w of Kentucky Highway 599.

[2] Lenberg: 3.5 miles east of Jeffersonville; 1 mile north of U.S. Highway 460, 1 mile east of blacktop road. This is the typical pedon for the series in this survey area.

[3] Tilsit silt loam: 1 mile east of Jeffersonville, 1.2 miles north of U.S. Highway 460; 0.3 mile west of gravel road. This is the typical pedon for the series in this survey area. Taxadjunct to the Tilsit series because the mineralogy is siliceous rather than mixed.

[4] Tilsit silt loam: 3.5 miles east of Jeffersonville; 1 mile north of U.S. Highway 460; 0.5 mile east of paved road; 200 feet south of gravel road. Taxadjunct to the Tilsit series because the mineralogy is siliceous rather than mixed.

[5] Trappist silty clay loam: 1.2 miles west from intersection of Kentucky Highways 11 and 646 at Levee; and 200 feet south of Kentucky Highway 646. This is the typical pedon for the series in this survey area. Taxadjunct to the Trappist series because underlain by soft shale.

[6] Trappist silty clay loam: 2.07 miles northeast of Jeffersonville: 2,000 feet southeast from the intersection of Kentucky Highway 213 and Refitt Road; 450 feet south of Refitt Road. Taxadjunct to the Trappist series because underlain by soft shale, base saturation is above 35 percent.

TABLE 19.--ENGINEERING INDEX TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon and depth in inches	Classification		Grain-size distribution										Liquid limit	Plasticity index	Moisture density		Specific gravity
			Percentage passing sieve--							Percentage smaller than--							
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Maximum dry density	Optimum moisture	
													Pct		Lb/ft^3	Pct	
Lenberg silt loam:[1] (79KY-173-5)																	
B22t----------8 to 14	A-7-5(8)	ML-MH	95	77	73	68	55	54	53	48	32	21	50	19	101	22	2.75
B23t---------14 to 25	A-7-5(19)	MH	100	100	100	100	71	71	70	67	44	31	55	25	102	21	2.76
Lenberg silt loam:[2] (79KY-173-6)																	
B22t----------7 to 14	A-7-6(11)	ML	100	100	100	100	74	74	73	67	34	25	45	17	102	22	2.73
B3-----------20 to 28	A-7-6(13)	ML	100	99	97	94	66	66	65	60	34	22	48	20	106	19	2.74
Tilsit silt loam:[3] (79KY-173-2)																	
B2t----------14 to 23	A-4 (11)	ML	100	100	100	100	100	100	100	91	40	21	34	10	106	19	2.73
Bx1----------23 to 32	A-4 (7)	ML	100	100	99	97	88	86	84	69	29	17	34	8	107	18	2.64
Tilsit silt loam:[4] (79KY-173-8)																	
B2t----------10 to 20	A-4 (6)	ML	100	100	100	100	100	100	98	72	27	13	29	6	107	17	2.70
Bx1 and Bx2--20 to 43	A-4 (4)	ML	100	100	100	100	100	100	98	69	27	13	29	4	105	20	2.71
Bx3----------43 to 64	A-4 (9)	ML	100	100	100	100	100	100	98	72	27	19	33	8	104	20	2.72
Trappist silty clay loam:[5] (79KY-173-3)																	
B22t---------10 to 20	A-7-5(16)	MH	100	100	100	99	66	65	64	60	51	40	58	23	95	26	2.76
Trappist silty clay loam:[6] (79KY-173-4)																	
B21t and B22t 5 to 24	A-7-6(13)	ML	100	100	98	96	72	70	69	66	42	28	47	19	100	22	2.76
C1 and C2----24 to 38	A-7-5(4)	GM	100	76	62	53	44	41	39	39	26	17	52	21	100	26	2.76
Tyler silt loam:[7] (79KY-173-1)																	
B21t--------- 9 to 17	A-4 (1)	CL-ML	100	100	99	96	80	75	75	42	16	10	24	4	115	12	2.69
Bx1----------24 to 37	A-4 (1)	CL-ML	100	100	99	96	83	75	79	49	17	11	23	5	111	15	2.69
Bx3----------53 to 67	A-4 (4)	CL	100	100	99	94	80	75	77	46	17	13	29	9	112	18	2.71

TABLE 19.--ENGINEERING INDEX TEST DATA--Continued

Soil name, report number, horizon and depth in inches	Classification		Grain-size distribution										Liquid limit	Plasticity index	Moisture density		Specific gravity
			Percentage passing sieve--							Percentage smaller than--							
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Maximum dry density	Optimum moisture	
Tyler silt loam:[8] (79KY-173-7)													Pct		Lb/ft^3	Pct	
B21t---------14 to 25	A-4 (2)	ML	100	100	100	100	100	99	88	52	17	13	24	3	108	16	2.68
Bx1----------25 to 39	A-4 (4)	CL-ML	100	100	100	100	100	99	88	52	10	16	27	5	109	17	2.71
B3-----------61 to 72	A-4 (6)	ML	100	100	100	100	100	98	89	56	21	13	30	6	107	17	2.71

[1] Lenberg silt loam: 2.13 miles south of Jeffersonville, 2900 ft. northeast of Big Round Mountain, 730 ft. w of Kentucky Highway 599.

[2] Lenberg: 3.5 miles east of Jeffersonville; 1 mile north of U.S. Highway 460, 1 mile east of blacktop road. This is the typical pedon for the series in this survey area.

[3] Tilsit silt loam: 1 mile east of Jeffersonville, 1.2 miles north of U.S. Highway 460; 0.3 mile west of gravel road. This is the typical pedon for the series in this survey area.

[4] Tilsit silt loam: 3.5 miles east of Jeffersonville; 1 mile north of U.S. Highway 460; 0.5 mile east of paved road; 200 feet south of gravel road.

[5] Trappist silty clay loam: 1.2 miles west from intersection of Kentucky Highways 11 and 646 at Levee; and 200 feet south of Kentucky Highway 646. This is the typical pedon for the series in this survey area.

[6] Trappist silty clay loam: 2.07 miles northeast of Jeffersonville: 2,000 feet southeast from the intersection of Kentucky Highway 213 and Refitt Road; 450 feet south of Refitt Road.

[7] Tyler silt loam: 0.8 mile south of Camargo; 1,250 feet south of the dam at filtration plant lake. This is the typical pedon for the series in this survey area. Taxadjunct to the Tyler series because there is less clay than typical for the series.

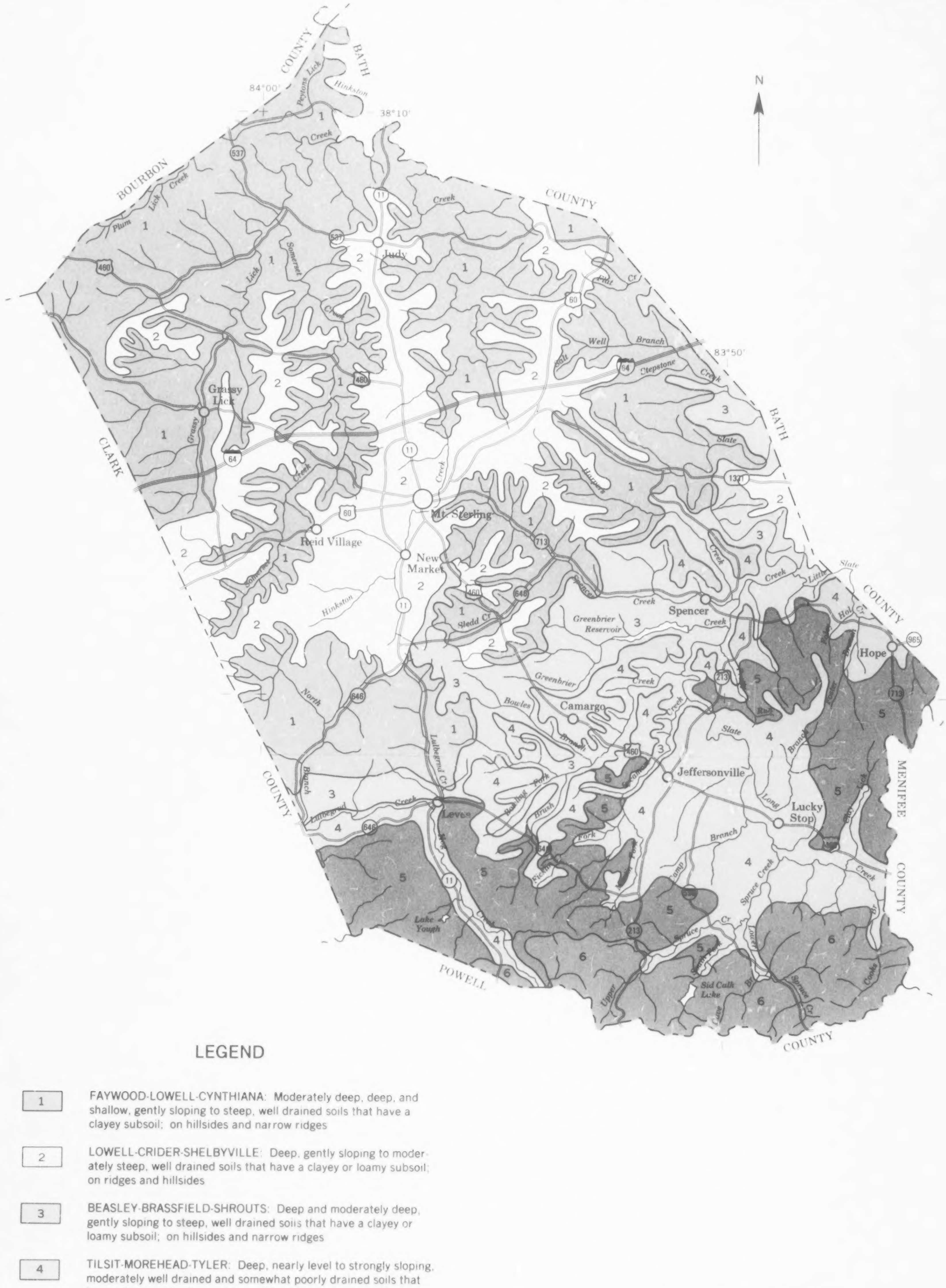
[8] Tyler silt loam: 1.5 miles east of Jeffersonville; 1.13 miles south of U.S. Highway 460; 200 feet east of blacktop road. Taxadjunct to the Tyler series because there is less clay than typical for the series.

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Aaron	Fine, mixed, mesic Aquic Hapludalfs
Beasley	Fine, mixed, mesic Typic Hapludalfs
Berks	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Bledsoe	Fine, mixed, mesic Typic Hapludalfs
*Boonesboro	Fine-loamy, mixed, mesic Fluventic Hapludolls
*Brassfield	Fine-loamy, carbonatic, mesic Rendollic Eutrochrepts
Caneyville	Fine, mixed, mesic Typic Hapludalfs
Colyer	Clayey-skeletal, mixed, mesic Lithic Dystrochrepts
Crider	Fine-silty, mixed, mesic Typic Paleudalfs
Cuba	Fine-silty, mixed, mesic Fluventic Dystrochrepts
Cynthiana	Clayey, mixed, mesic Lithic Hapludalfs
Elk	Fine-silty, mixed, mesic Ultic Hapludalfs
Faywood	Fine, mixed, mesic Typic Hapludalfs
Huntington	Fine-silty, mixed, mesic Fluventic Hapludolls
Latham	Clayey, mixed, mesic Aquic Hapludults
Lenberg	Fine, mixed, mesic Ultic Hapludalfs
Lowell	Fine, mixed, mesic Typic Hapludalfs
Melvin	Fine-silty, mixed, nonacid, mesic Typic Fluvaquents
Morehead	Fine-silty, mixed, mesic Aquic Hapludults
Nicholson	Fine-silty, mixed, mesic Typic Fragiudalfs
Otwell	Fine-silty, mixed, mesic Typic Fragiudalfs
*Peoga	Fine-silty, mixed, mesic Typic Ochraqualfs
Robertsville	Fine-silty, mixed, mesic Typic Fragiaqualfs
*Sees	Fine, mixed, mesic Aquollic Hapludalfs
Shelbyville	Fine-silty, mixed, mesic Mollic Hapludalfs
Shelocta	Fine-loamy, mixed, mesic Typic Hapludults
Shrouts	Fine, mixed, mesic Typic Hapludalfs
*Stendal	Fine-silty, mixed, acid, mesic Aeric Fluvaquents
*Tilsit	Fine-silty, mixed, mesic Typic Fragiudults
*Trappist	Clayey, mixed, mesic Typic Hapludults
*Tyler	Fine-silty, mixed, mesic Aeric Fragiaquults
Woolper	Fine, mixed, mesic Typic Argiudolls

* The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985 O - 478-189 QL 3


N
84°00'
38°10'
83°50'
38°00'
BATH
COUNTY
BOURBON
CLARK
POWELL
MENIFEE
Judy
Grassy Lick
Mt. Sterling
Reid Village
New Market
Spencer
Hope
Camargo
Jeffersonville
Lucky Stop
Levee
Greenbrier Reservoir
Lake Yough
Sid Calk Lake
1
2
3
4
5
6

LEGEND

1 FAYWOOD-LOWELL-CYNTHIANA: Moderately deep, deep, and shallow, gently sloping to steep, well drained soils that have a clayey subsoil; on hillsides and narrow ridges

2 LOWELL-CRIDER-SHELBYVILLE: Deep, gently sloping to moderately steep, well drained soils that have a clayey or loamy subsoil; on ridges and hillsides

3 BEASLEY-BRASSFIELD-SHROUTS: Deep and moderately deep, gently sloping to steep, well drained soils that have a clayey or loamy subsoil; on hillsides and narrow ridges

4 TILSIT-MOREHEAD-TYLER: Deep, nearly level to strongly sloping, moderately well drained and somewhat poorly drained soils that have a loamy subsoil; on ridges, side slopes, and stream terraces

5 LENBERG-TRAPPIST-COLYER: Moderately deep and shallow, strongly sloping to very steep, well drained soils that have a clayey subsoil; on hillsides, toe slopes, and narrow to very narrow ridges

6 SHELOCTA-BERKS-BLEDSOE: Deep and moderately deep, moderately steep to very steep, well drained soils that have a loamy or clayey subsoil; on side slopes, toe slopes, and benches

COMPILED 1984

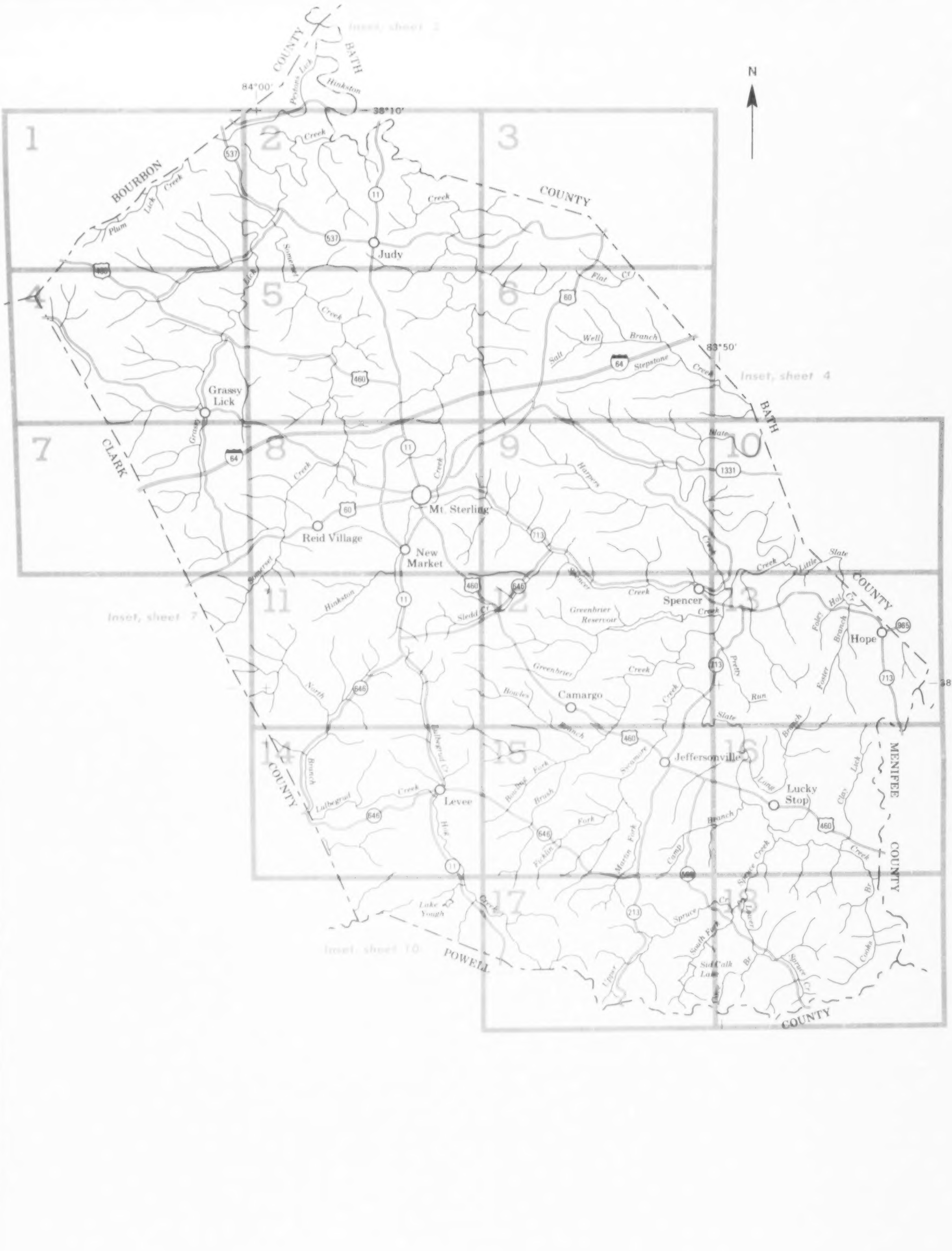
Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
KENTUCKY NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
KENTUCKY AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
MONTGOMERY COUNTY
KENTUCKY

Scale 1:126,720

1 0 1 2 3 4 Miles
1 0 3 6 Km


N
84°00′
38°10′
83°50′
38°00′
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
BOURBON
COUNTY
BATH
COUNTY
BATH
CLARK
COUNTY
POWELL
COUNTY
MENIFEE
COUNTY
Inset, sheet 2
Inset, sheet 4
Inset, sheet 7
Inset, sheet 10
Grassy Lick
Judy
Mt. Sterling
Reid Village
New Market
Spencer
Hope
Camargo
Jeffersonville
Levee
Lucky Stop
Lake Yough
Greenbrier Reservoir
Sid Calk Lake
Hinkston
Plum Lick Creek
Somerset
Stepstone Creek
Salt Well Branch
Flat Cr
Slate
Harpers
Spencer Creek
Greenbrier
Creek
Bowles
Branch
Sycamore
Hinkston
North
Lulbegrud Creek
Lulbegrud Cr
Hog Creek
Boone Fork
Brush Fork
Fork
Martin Fork
Camp
Pretty Run
Foster Branch
Foley
Hole Cr
Little Slate
Clay Lick
Long Branch
Spruce Creek
Spruce Cr
South Fork
Cooks Br
Upper
537
11
460
60
64
1331
713
646
965
213

INDEX TO MAP SHEETS

MONTGOMERY COUNTY
KENTUCKY

Scale 1:126,720

1 0 1 2 3 4 Miles
1 0 3 6 Km

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

MONTGOMERY COUNTY, KENTUCKY

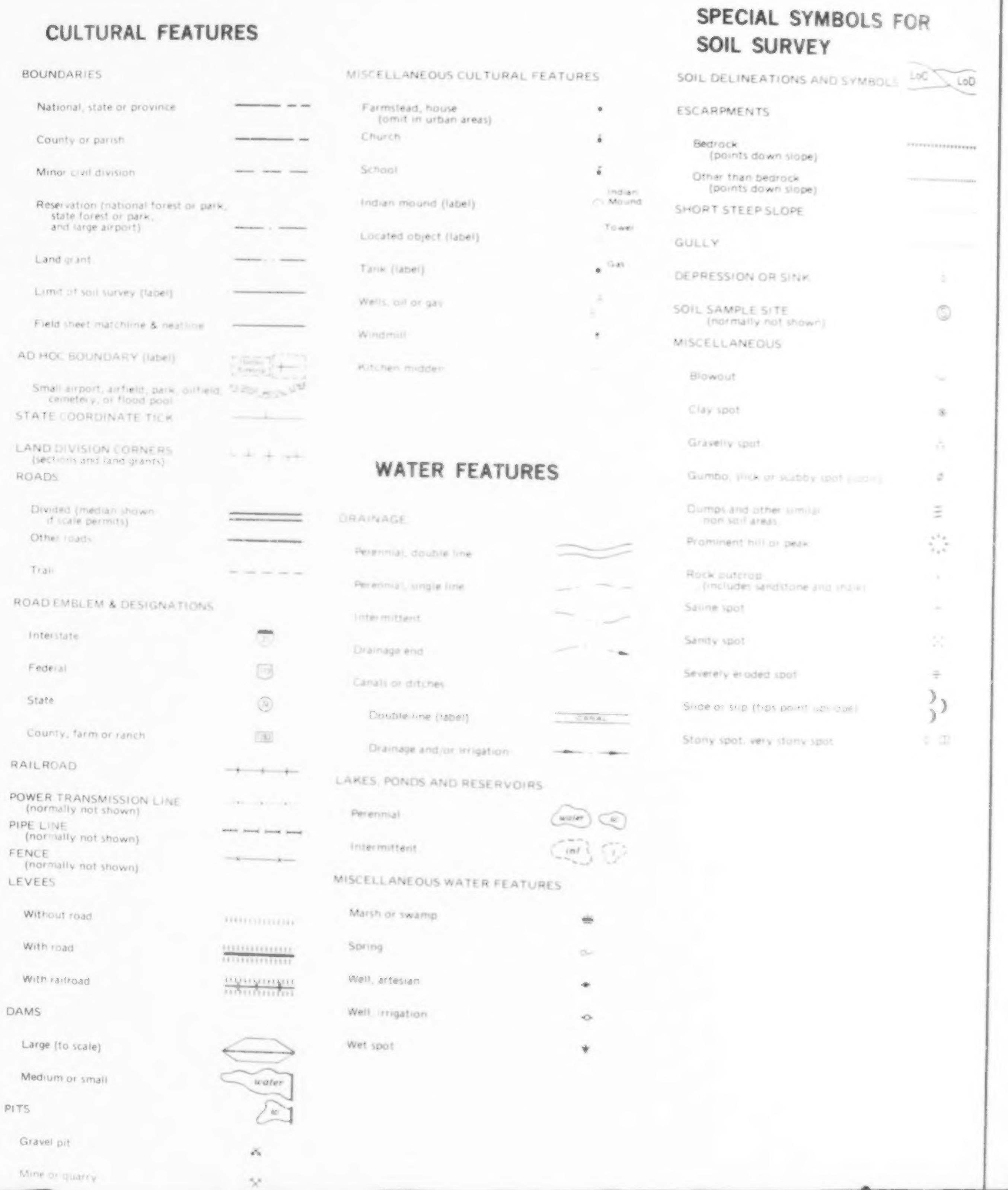
KENTUCKY NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
KENTUCKY AGRICULTURAL EXPERIMENT STATION

SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is a small letter connotative of the soil name if possible. The third, if used, is a capital letter and indicates the slope class. Symbols without a slope letter are nearly level, except for Pits-Dumps complex, which is not soil and has variable slopes.

SYMBOL	NAME
AaB	Aaron silt loam, 2 to 6 percent slopes
AaC	Aaron silt loam, 6 to 12 percent slopes
BaB	Beasley silt loam, 2 to 6 percent slopes
BaC	Beasley silt loam, 6 to 12 percent slopes
BcF	Bledsoe-Rock outcrop-Caneyville complex, 6 to 60 percent slopes
BlE	Bledsoe-Shelocta complex, 12 to 35 percent slopes
Bo	Boonesboro silt loam, frequently flooded
BrC	Brassfield silty clay loam, 6 to 12 percent slopes, eroded
BsE	Brassfield-Shrouts-Beasley complex, 12 to 35 percent slopes, eroded
CoF	Colyer-Trappist complex, 25 to 60 percent slopes, eroded
CrB	Crider silt loam, 2 to 6 percent slopes
CrC	Crider silt loam, 6 to 15 percent slopes
Cu	Cuba silt loam, occasionally flooded
ElB	Elk silt loam, 2 to 6 percent slopes
ElC	Elk silt loam, 6 to 12 percent slopes
FaC	Faywood silt loam, 6 to 12 percent slopes
FaD	Faywood silt loam, 12 to 20 percent slopes
FcE	Faywood-Cynthiana complex, 12 to 35 percent slopes, eroded
FlE	Faywood-Lowell complex, 12 to 35 percent slopes
Hu	Huntington silt loam, occasionally flooded
LaF	Latham-Shelocta Rock outcrop complex, 20 to 60 percent slopes
LeC	Lenberg silt loam, 6 to 12 percent slopes, eroded
LeD	Lenberg silt loam, 12 to 20 percent slopes, eroded
LnF	Lenberg-Shelocta complex, 20 to 50 percent slopes, eroded
LoB	Lowell silt loam, 2 to 6 percent slopes
LoC	Lowell silt loam, 6 to 12 percent slopes
LoD	Lowell silt loam, 12 to 20 percent slopes
Me	Melvin silt loam, frequently flooded
Mo	Morehead silt loam, rarely flooded
NiB	Nicholson silt loam, 2 to 8 percent slopes
OtB	Otwell silt loam, 2 to 8 percent slopes
Pe	Peoga silt loam, rarely flooded
Pt	Pits-Dumps complex
Rc	Robertsville silt loam
Sc	Sees silt loam, rarely flooded
SeB	Shelbyville silt loam, 2 to 6 percent slopes
SeC	Shelbyville silt loam, 6 to 12 percent slopes
ShC	Shelocta silt loam, 6 to 15 percent slopes
SlF	Shelocta-Berks complex, 20 to 60 percent slopes
St	Stendal silt loam, frequently flooded
TiB	Tilsit silt loam, 0 to 6 percent slopes
TiC	Tilsit silt loam, 6 to 12 percent slopes
TrC	Trappist silt loam, 6 to 12 percent slopes, eroded
TsE	Trappist-Colyer-Shelocta complex, 12 to 30 percent slopes, eroded
Ty	Tyler silt loam
WoB	Woolper silty clay loam, 2 to 8 percent slopes

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND



CULTURAL FEATURES

BOUNDARIES
- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)
- Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS
- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS
- Interstate
- Federal
- State
- County, farm or ranch

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES
- Without road
- With road
- With railroad

DAMS
- Large (to scale)
- Medium or small

PITS
- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES
- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label)
- Located object (label)
- Tank (label)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE
- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS
- Perennial
- Intermittent

MISCELLANEOUS WATER FEATURES
- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS
- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

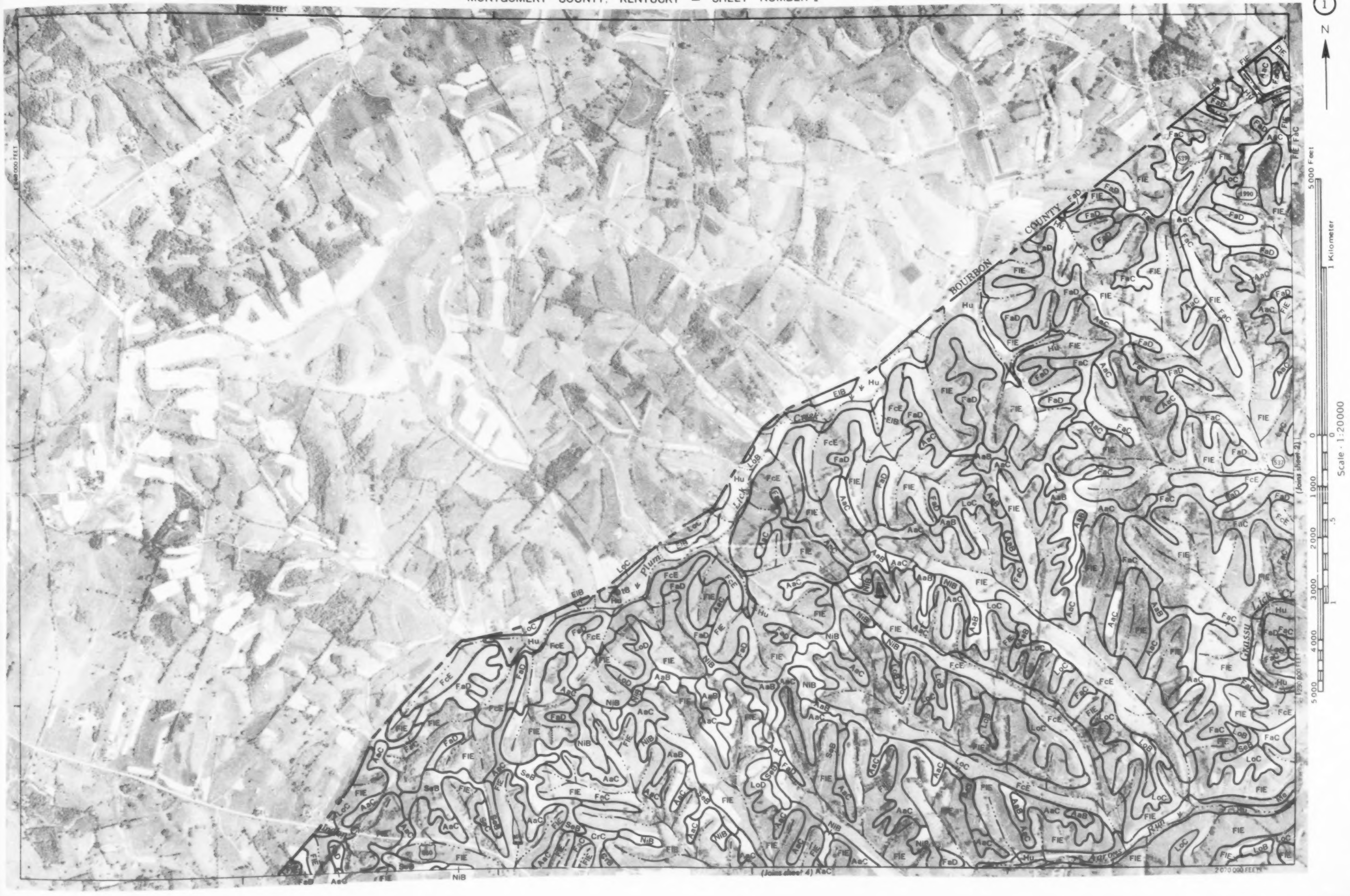
GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

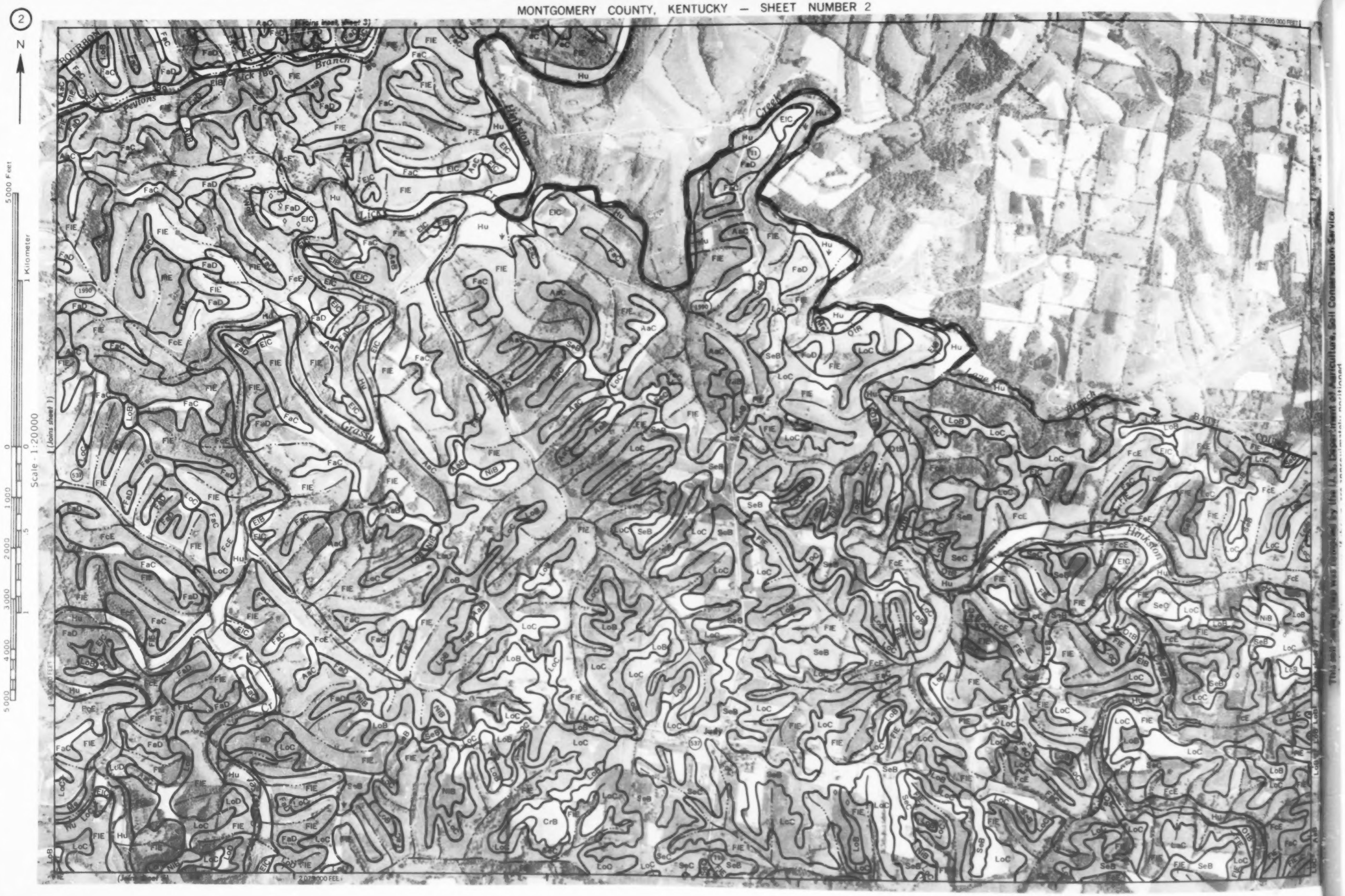
MISCELLANEOUS
- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 1


①
N
BOURBON COUNTY
Plum Lick Creek
Grassy Lick Cr
Aarons Run
(Joins sheet 2)
(Joins sheet 4) AaC
2 070 000 FEET
5 000 Feet
1 Kilometer
Scale 1:20000
0
1 000
2 000
3 000
4 000
5 000
.5
1
537
1990
AaB
AaC
CrC
ElB
FaC
FaD
FcE
FlE
Hu
LoB
LoC
LoD
NiB
SeB

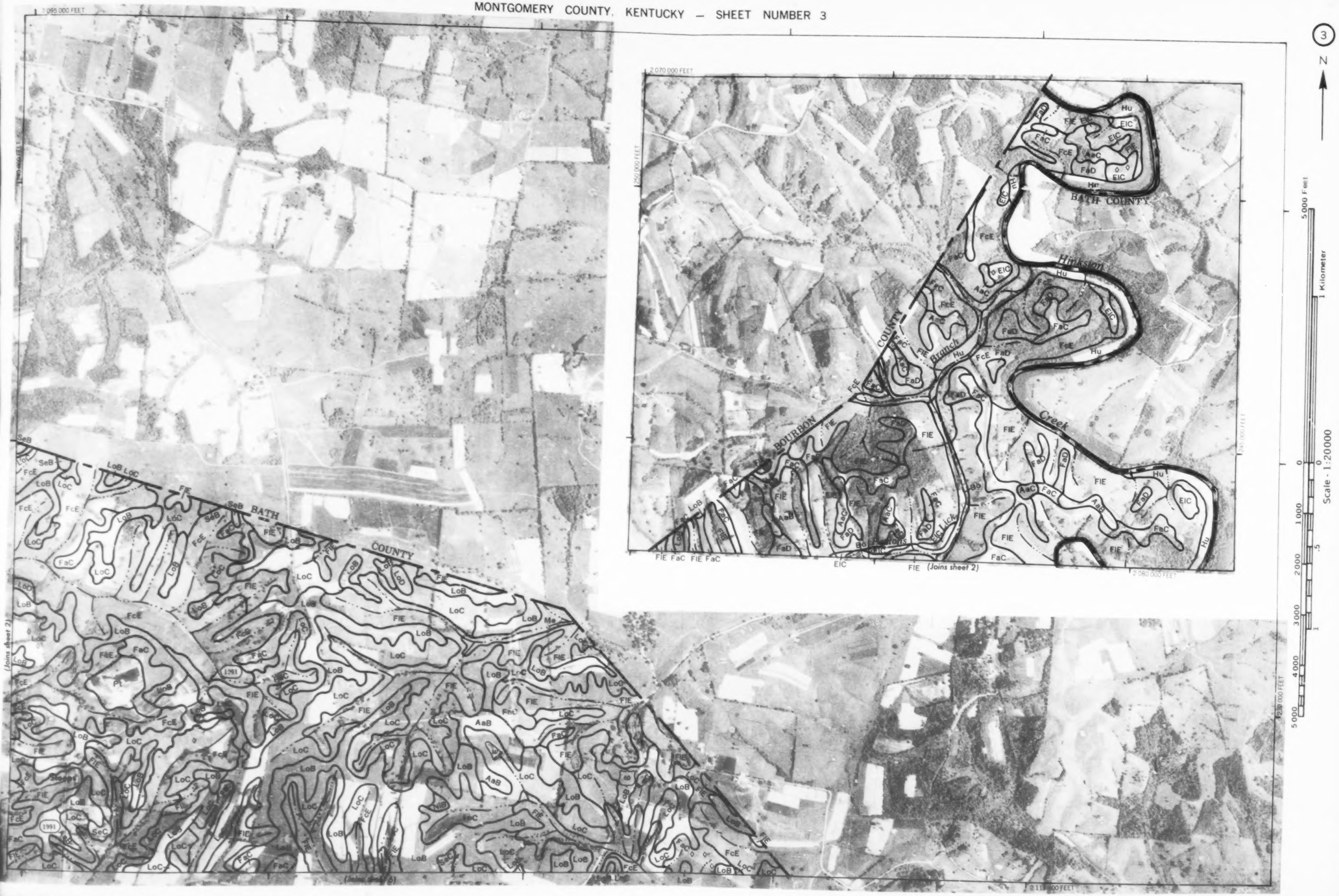
②

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 2


N
5000 Feet
1 Kilometer
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 1)
(Joins inset sheet 3)
2 095 000 FEET
2 075 000 FEET
BOURBON
BATH COUNTY
Peytons
Lick Branch
Hinkston Creek
Grassy
Lane Branch
Hinkston
Judy
1990
537
11
Hu
FlE
FaC
FaD
ElC
AaC
LoB
LoC
SeB
FcE
NiB
OtB
CrB

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service.
are approximately positioned

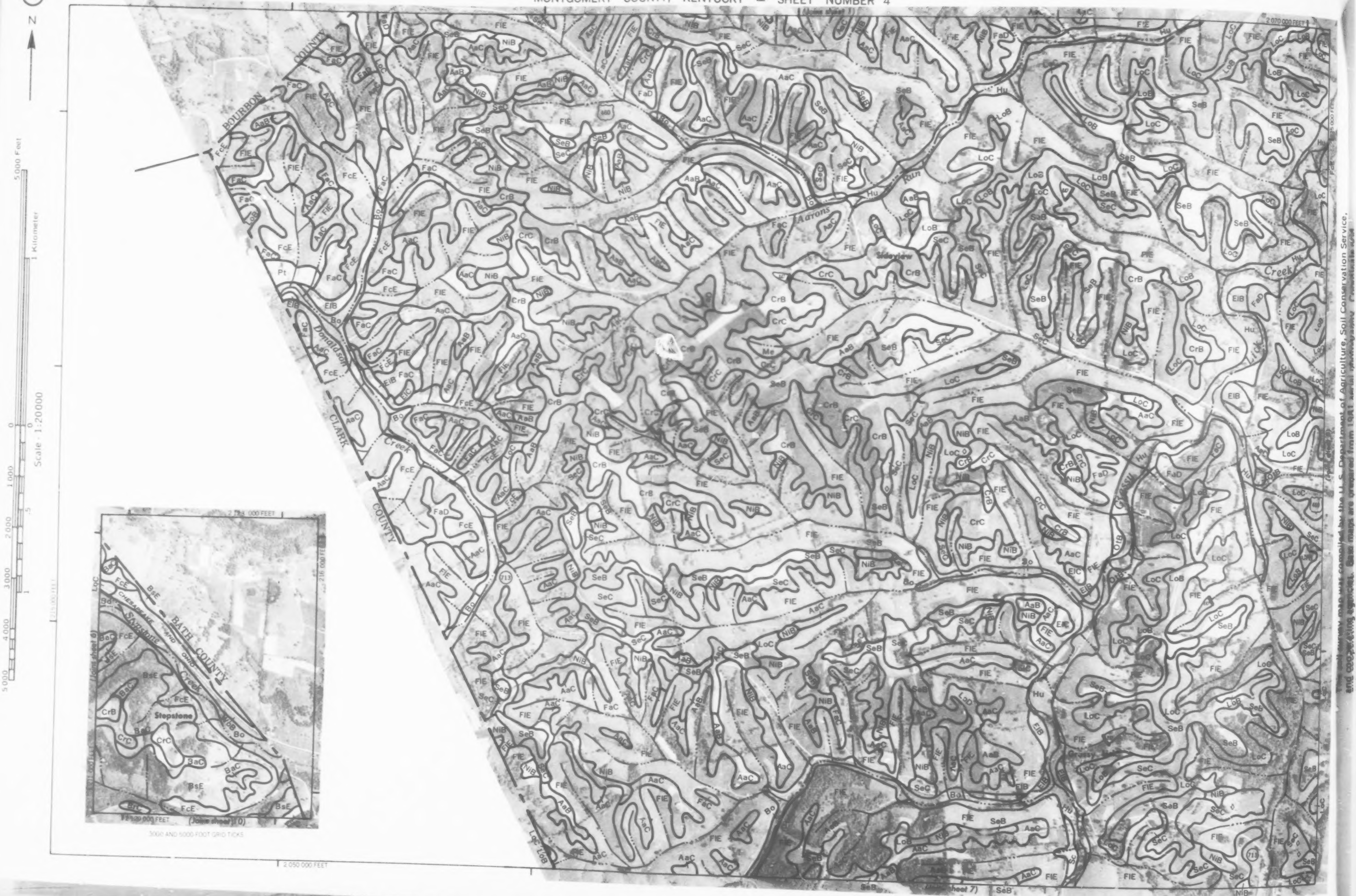
MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 3



③
N
2 095 000 FEET
2 070 000 FEET
250 000 FEET
2 080 000 FEET
2 110 000 FEET
BATH COUNTY
BOURBON COUNTY
Hinkston Creek
Branch
Lick
(Joins sheet 2)
SeB
LoB
LoC
FcE
FaC
FlE
AaB
AaC
FaD
ElC
Hu
Bo
Me
Pt
SeC
1991
1981
5000 Feet
1 Kilometer
Scale - 1:20000
0
1000
2000
3000
4000
5000
.5
1

④

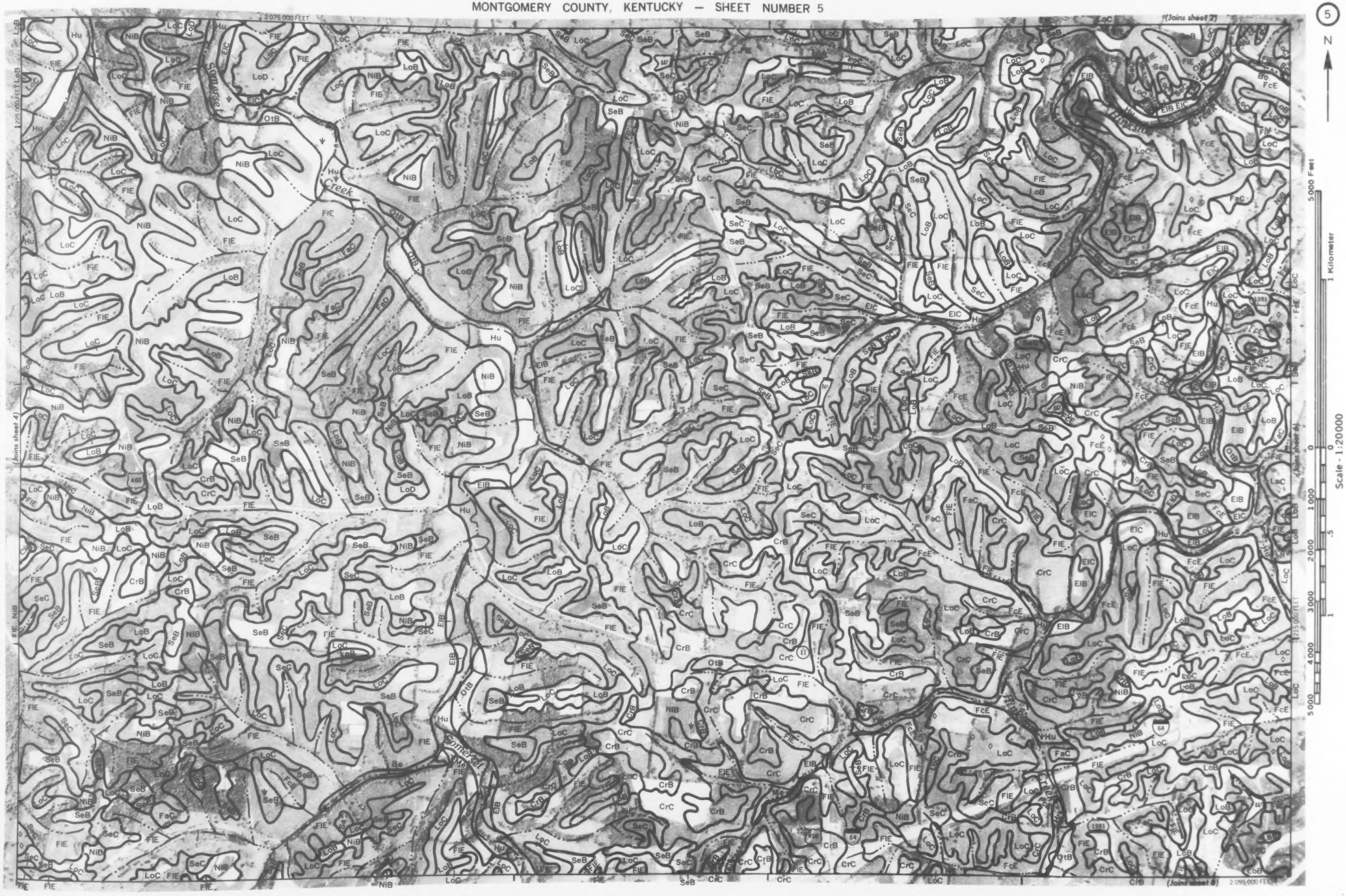
MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 4


N
5000 Feet
1 Kilometer
Scale 1:20000
0
1000
2000
3000
4000
5000
BOURBON
COUNTY
CLARK
COUNTY
Donaldson
Creek
Aarons
Run
Sideview
Lick
Creek
Grassy
713
460
2 070 000 FEET
2 050 000 FEET
(Joins sheet 7)
BATH COUNTY
CHESAPEAKE AND OHIO
Stepstone
Creek
2 110 000 FEET
(Joins sheet 6)
(Joins sheet 10)
3000 AND 5000 FOOT GRID TICKS

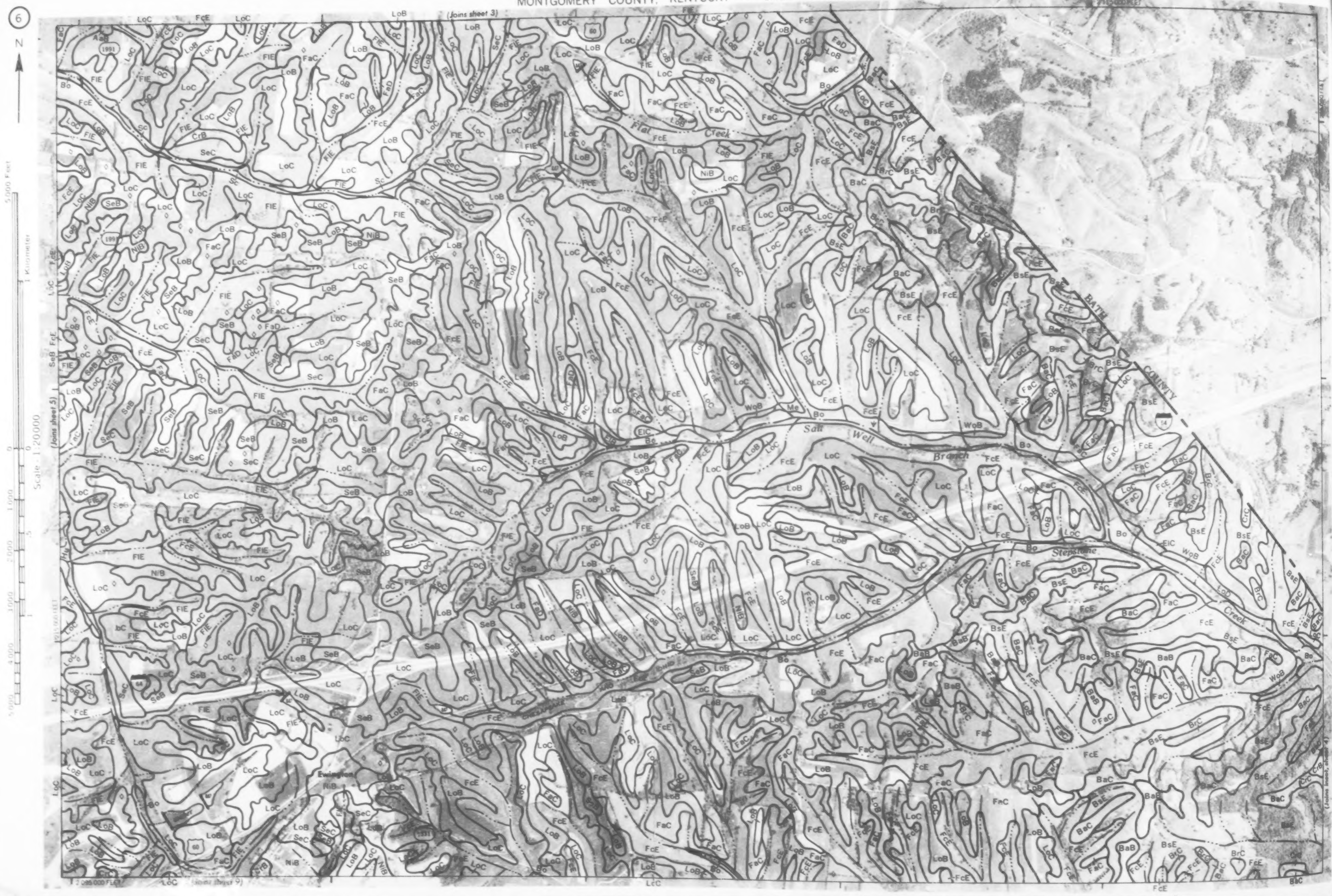
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 5

ticks and land division corners, if shown, are approximately positioned.


2 075 000 FEET
(Joins sheet 2)
(Joins sheet 4)
(Joins sheet 6)
(Joins sheet 8)
225 000 FEET
215 000 FEET
2 095 000 FEET
Somerset
Creek
N
5000 Feet
1 Kilometer
Scale - 1:20000
0
1000
2000
3000
4000
5000
0
.5
1
460
11
64
1991
LoB
LoC
LoD
FlE
NiB
SeB
SeC
CrB
CrC
ElB
ElC
FcE
FaC
OtB
Hu
Me
Bo

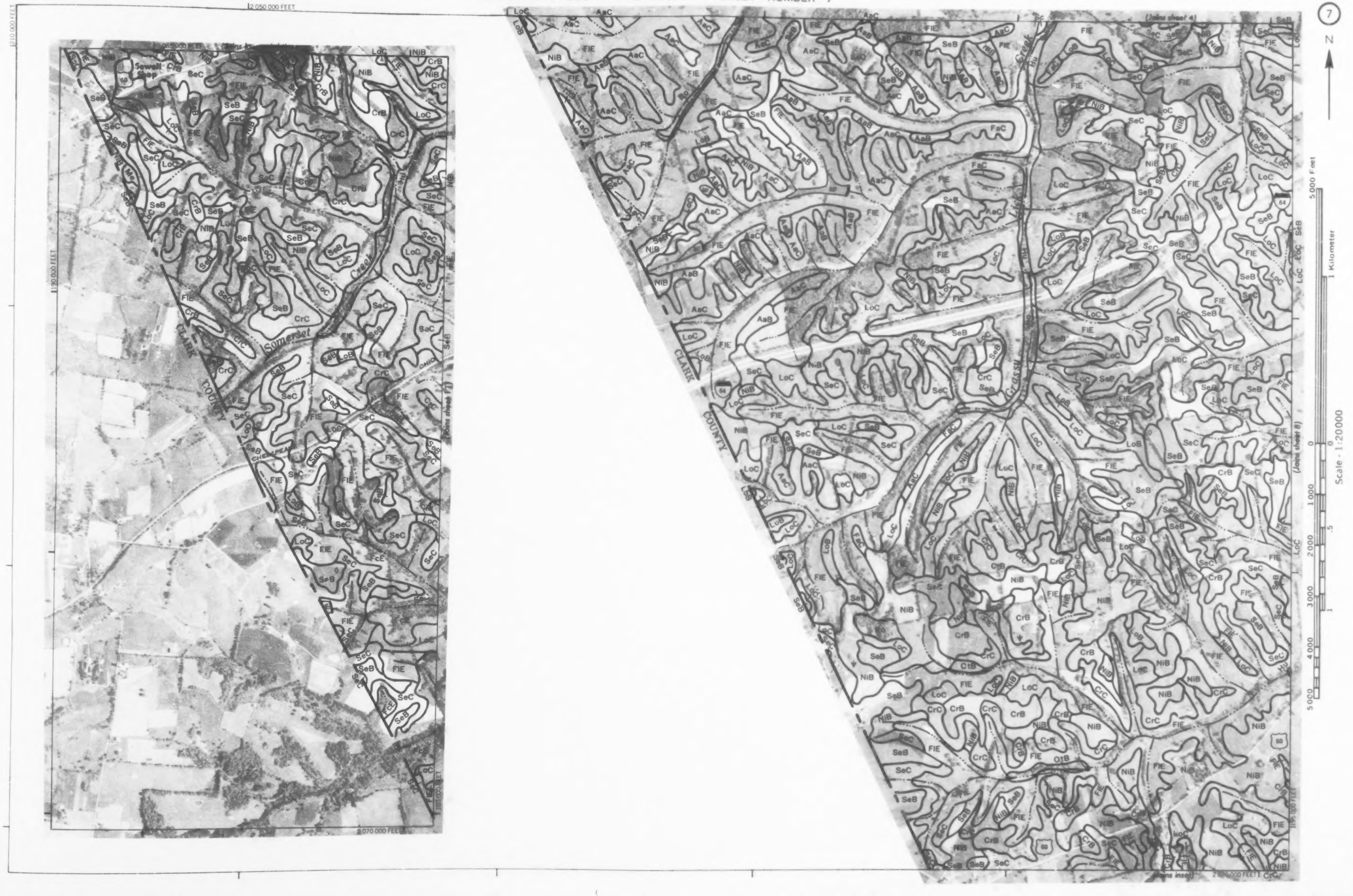
MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 6



⑥
N
5000 Feet
1 Kilometer
Scale 1:20000
0 1000 2000 3000 4000 5000
(Joins sheet 3)
(Joins sheet 5)
(Joins sheet 9)
(Joins sheet 4)
Flat Creek
Salt Well Branch
Stepstone Creek
BATH COUNTY
Ewington
60
1991
64

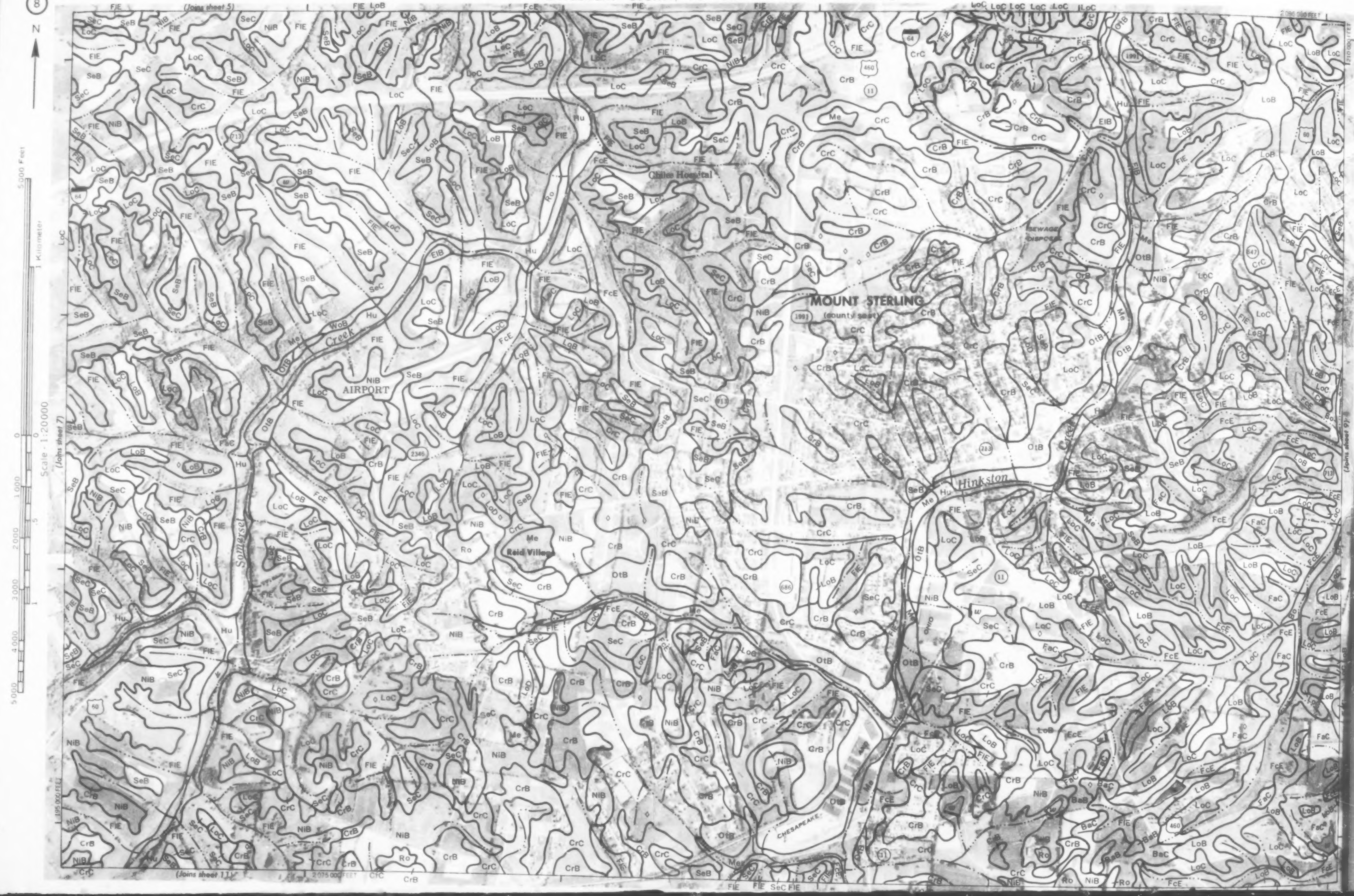
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 7

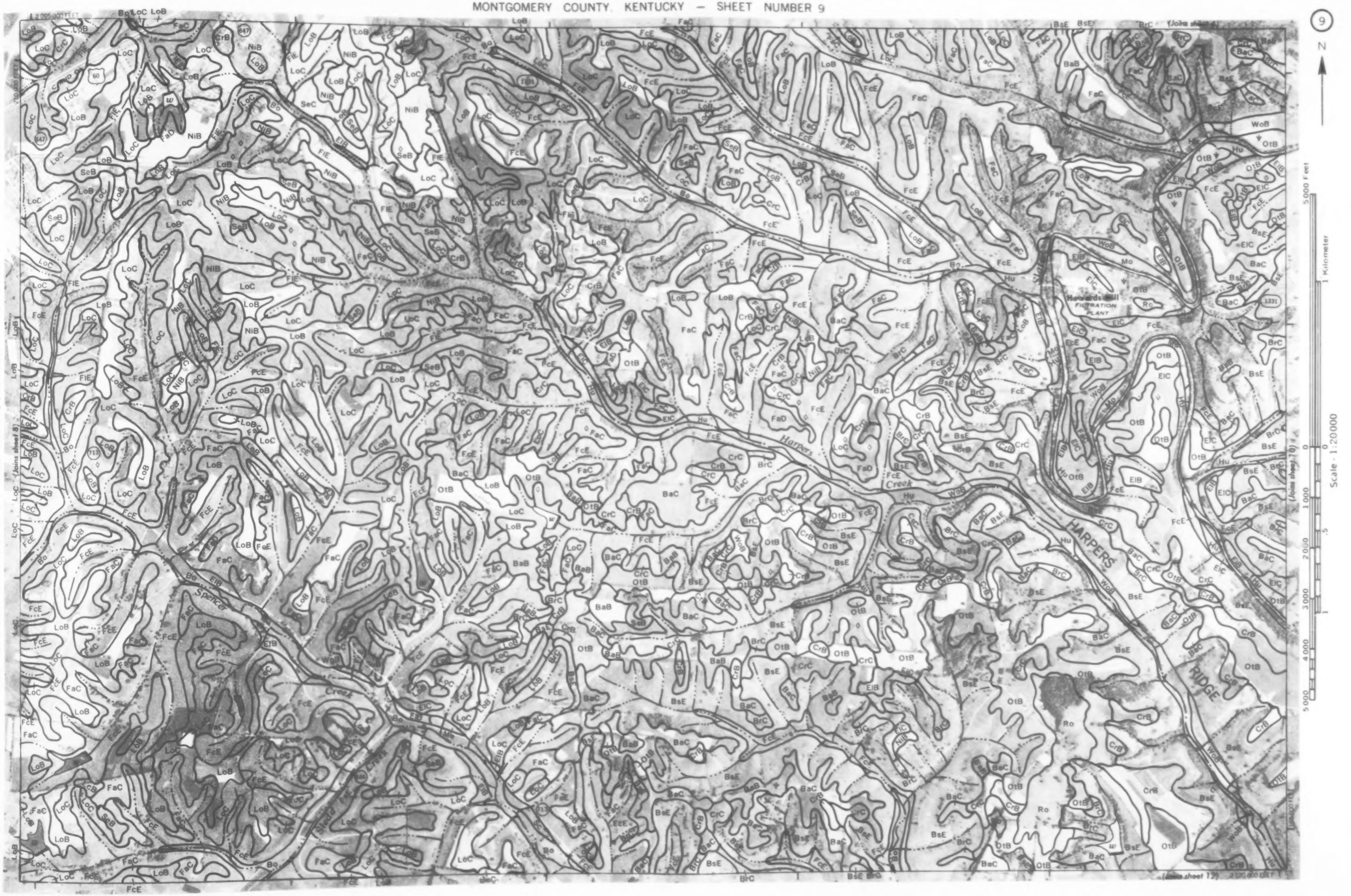

7
N
2 050 000 FEET
210 000 FEET
190 000 FEET
2 070 000 FEET
2 090 000 FEET
(Joins sheet 4)
(Joins sheet 8)
(Joins sheet 1)
(Joins inset)
Jewell City
Somerset
Creek
Grassy
Creek
CLARK
COUNTY
CLARK
COUNTY
60
64
5 000 Feet
1 Kilometer
Scale 1:20000
5000
4000
3000
2000
1000
0
1
.5
0

⑧

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 8

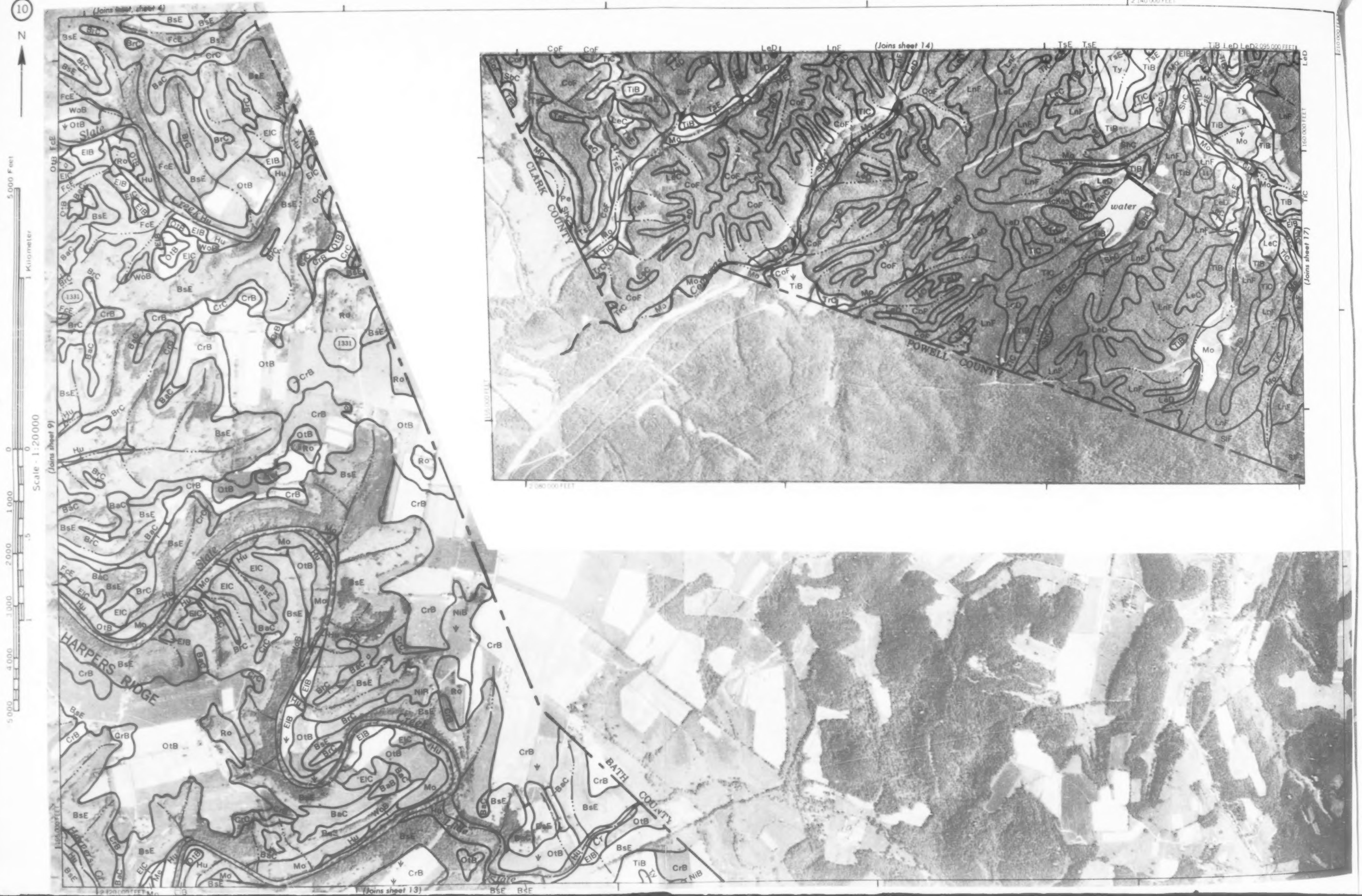

N
5000 Feet
1 Kilometer
Scale 1:20 000
0
1000
2000
3000
4000
5000
0
.5
(Joins sheet 5)
(Joins sheet 7)
(Joins sheet 9)
(Joins sheet 11)
2 095 000 FEET
210 000 FEET
195 000 FEET
2 075 000 FEET
MOUNT STERLING
(county seat)
AIRPORT
Chiles Hospital
Reid Village
SEWAGE DISPOSAL
Hinkston Creek
Somerset Creek
CHESAPEAKE
OHIO
460
11
64
60
713
1991
686
2346
213
641
FlE
FcE
FaC
LoB
LoC
LoD
SeB
SeC
NiB
CrB
CrC
Hu
Me
OtB
ElB
WoB
Ro
BaB
BaC
Soil Conservation Service,
approximately positioned.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 9

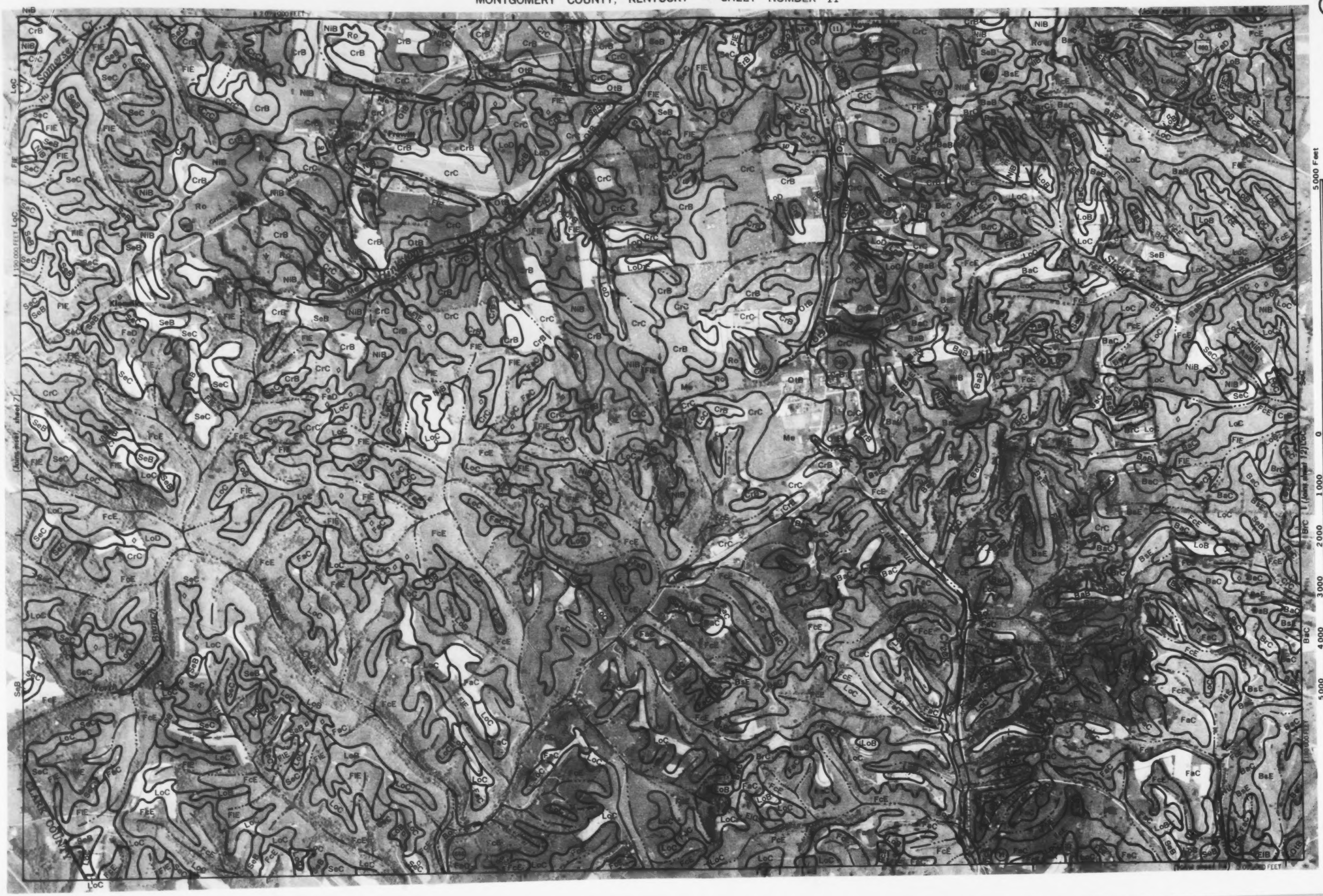

9
N
(Joins sheet 4)
(Joins sheet 8)
(Joins sheet 10)
(Joins sheet 12)
2 095 000 FEET
2 100 000 FEET
Howards Mill
FILTRATION PLANT
Harpers
Creek
HARPERS
RIDGE
Spencer
Creek
Slate
Creek
5000 Feet
1 Kilometer
0
Scale - 1:20000
0
1000
2000
3000
4000
5000
.5
1
LoB
LoC
NiB
SeB
FcE
FaC
FlE
ElB
ElC
OtB
BaC
BsE
BrC
CrB
CrC
WoB
Hu
Mo
Ro
Bo

ticks and land division corners, if shown, are approximately positioned.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 10


N
5000 Feet
1 Kilometer
Scale 1:20000
0
1000
2000
3000
4000
5000
0
.5
1
(Joins sheet 4)
(Joins sheet 14)
(Joins sheet 17)
(Joins sheet 9)
(Joins sheet 13)
2 140 000 FEET
2 095 000 FEET
160 000 FEET
155 000 FEET
2 080 000 FEET
2 120 000 FEET
CLARK COUNTY
POWELL COUNTY
BATH COUNTY
HARPERS RIDGE
Slate Creek
Harpers Cr
Corndraft
water
1331
BsE
BrC
FcE
WoB
OtB
ElB
ElC
Hu
Ro
BaC
CrC
CrB
Mo
BsC
NiB
TiB
TiC
TsE
Ty
CoF
LeD
LeC
LnF
ShC
SlF
Pe
Cr

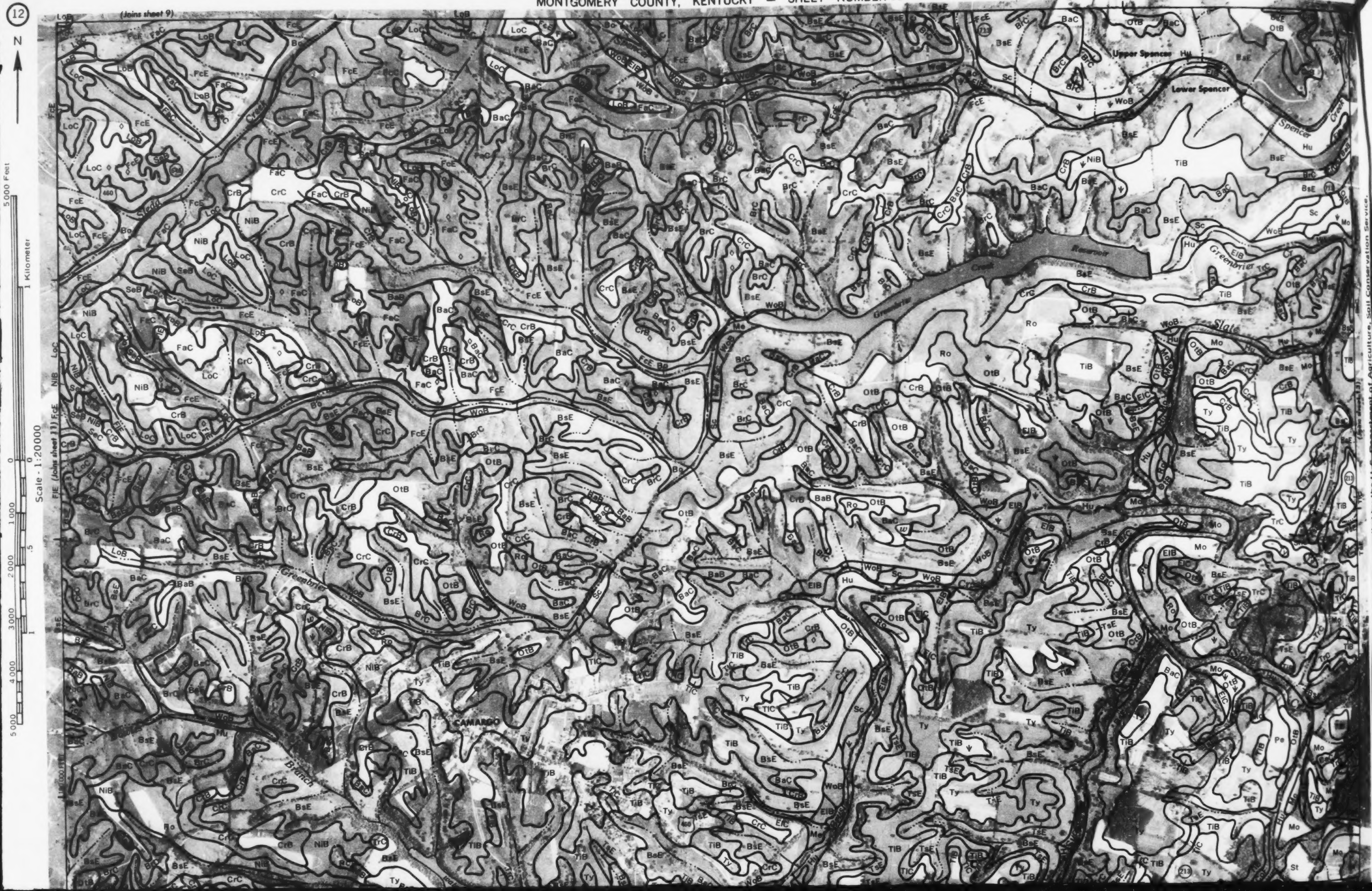
MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 11



11
N
5000 Feet
1 Kilometer
Scale - 1:20000
0
1000
2000
3000
4000
5000
0
.5
1
(Joins sheet 7)
(Joins sheet 12)
1 190 000 FEET
CLARK COUNTY
Somerset
Kiddville
Branch
Stoner

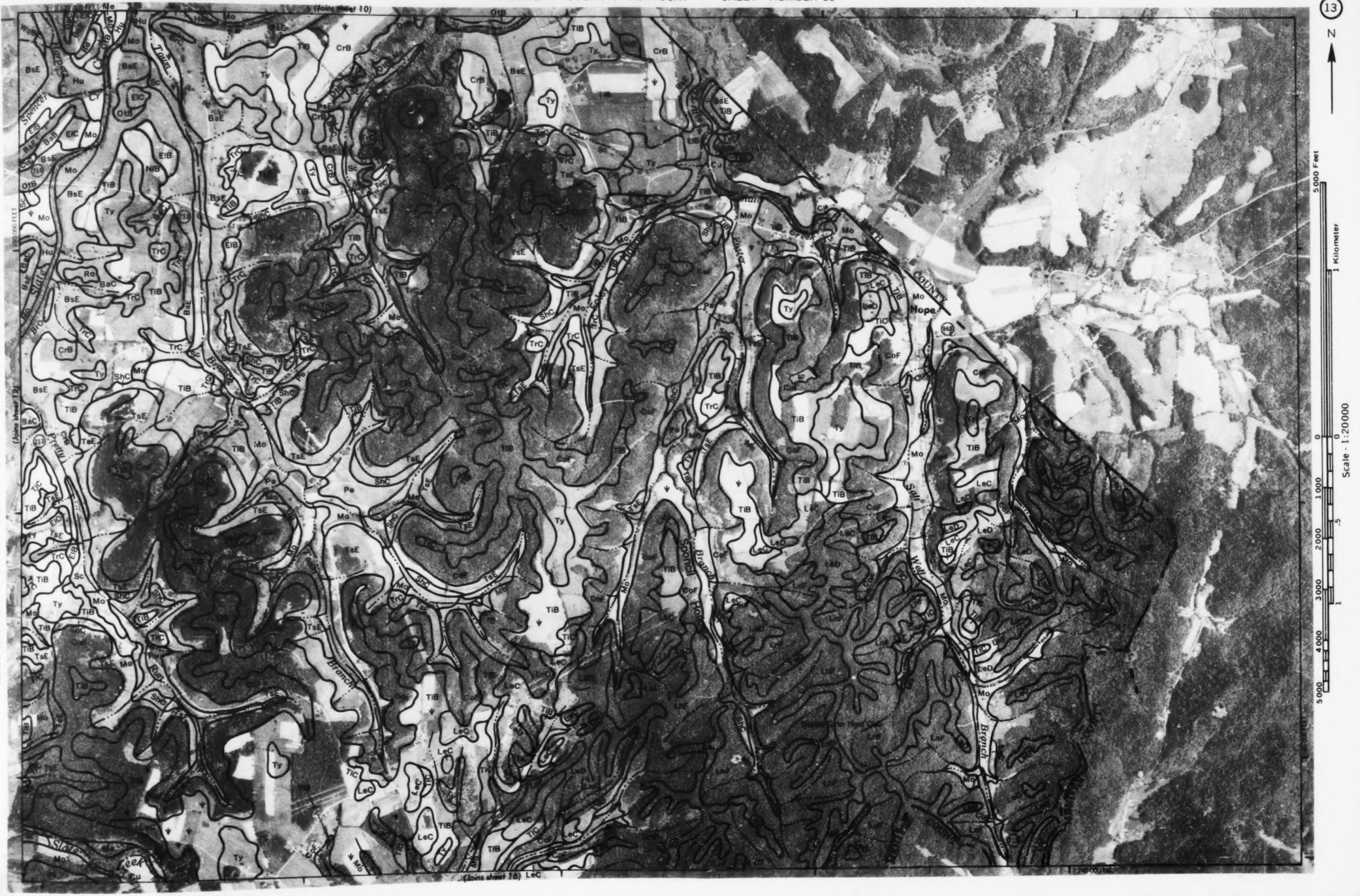
and cooperating agencies. Base maps are prepared from 1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 12


12
N
(Joins sheet 9)
(Joins sheet 11)
(Joins sheet 13)
Scale 1:20000
5000 Feet
1 Kilometer
.5
0
1000
2000
3000
4000
5000
Upper Spencer
Lower Spencer
Spencer Creek
Reservoir
Greenbrier Creek
Slate
Slate Creek
Camargo
Branch
Creek
460
213
713
TiB
OtB
BsE
BrC
CrB
CrC
BaC
FcE
LoC
NiB
Ty
Mo
Hu
Ro
WoB
ElB
Sc
Pe
St
TsE

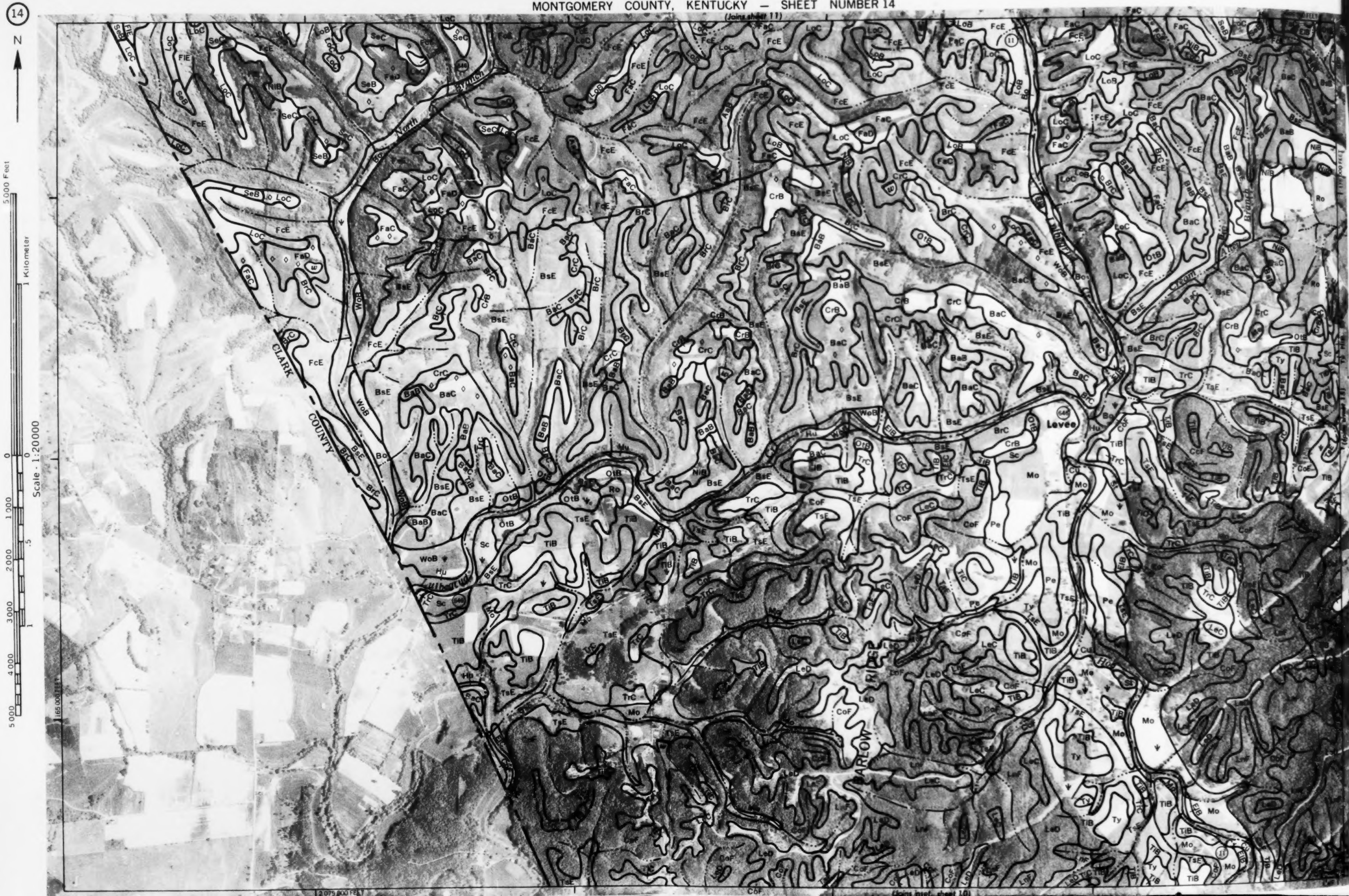
U.S. Department of Agriculture, Soil Conservation Service.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 13


13
N
(Joins sheet 10)
(Joins sheet 12)
(Joins sheet 16)
180 000 FEET
Hope
Slate
Spencer
Salt Well Branch
Spoonell Branch
COUNTY
5000 Feet
1 Kilometer
Scale - 1:20000
0
1000
2000
3000
4000
5000
.5
1

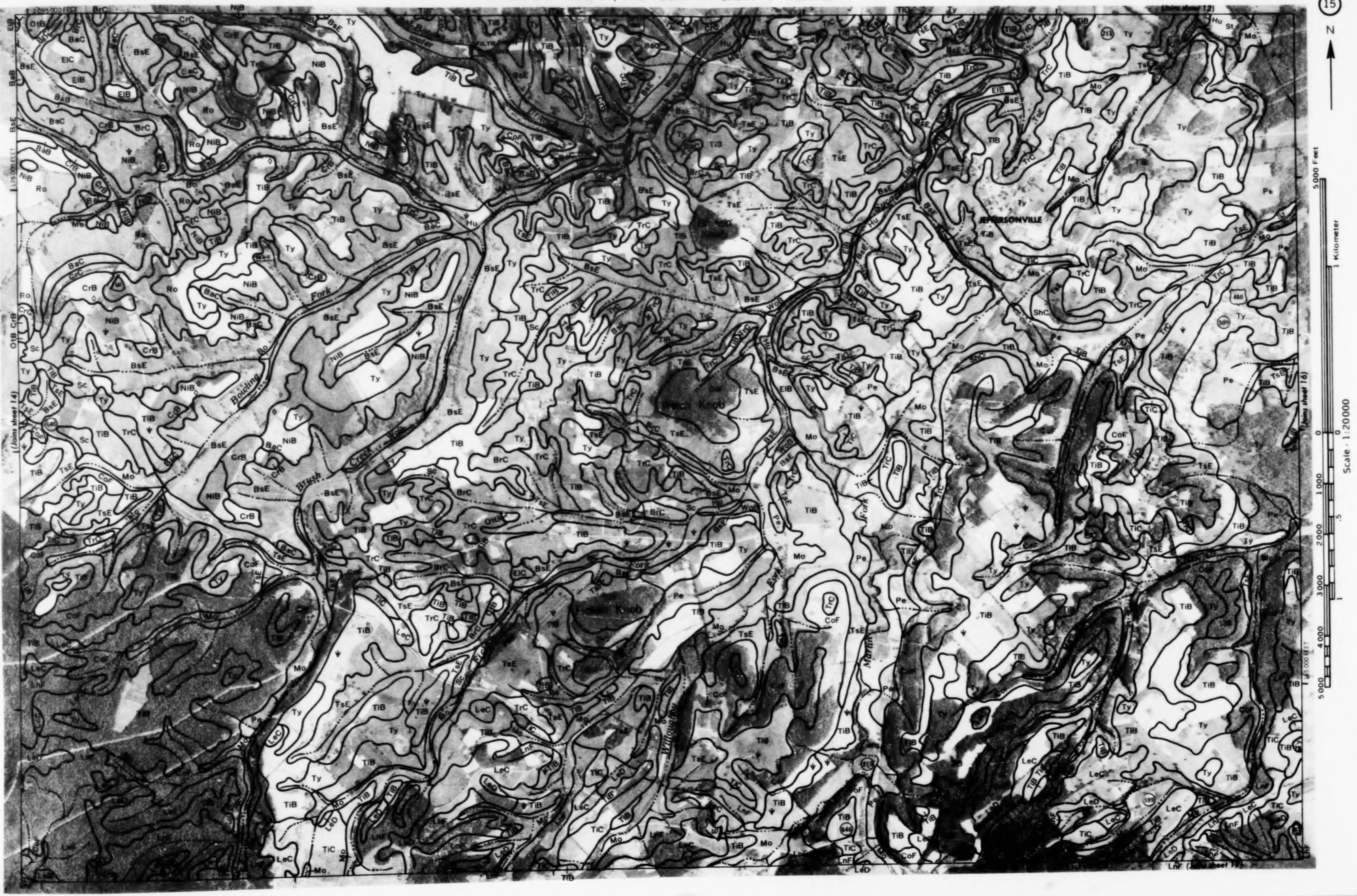
and cooperating agencies. Base maps are prepared from 1981 aerial photography. Coordinate grid
ticks and land division corners, if shown, are approximately positioned.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 14



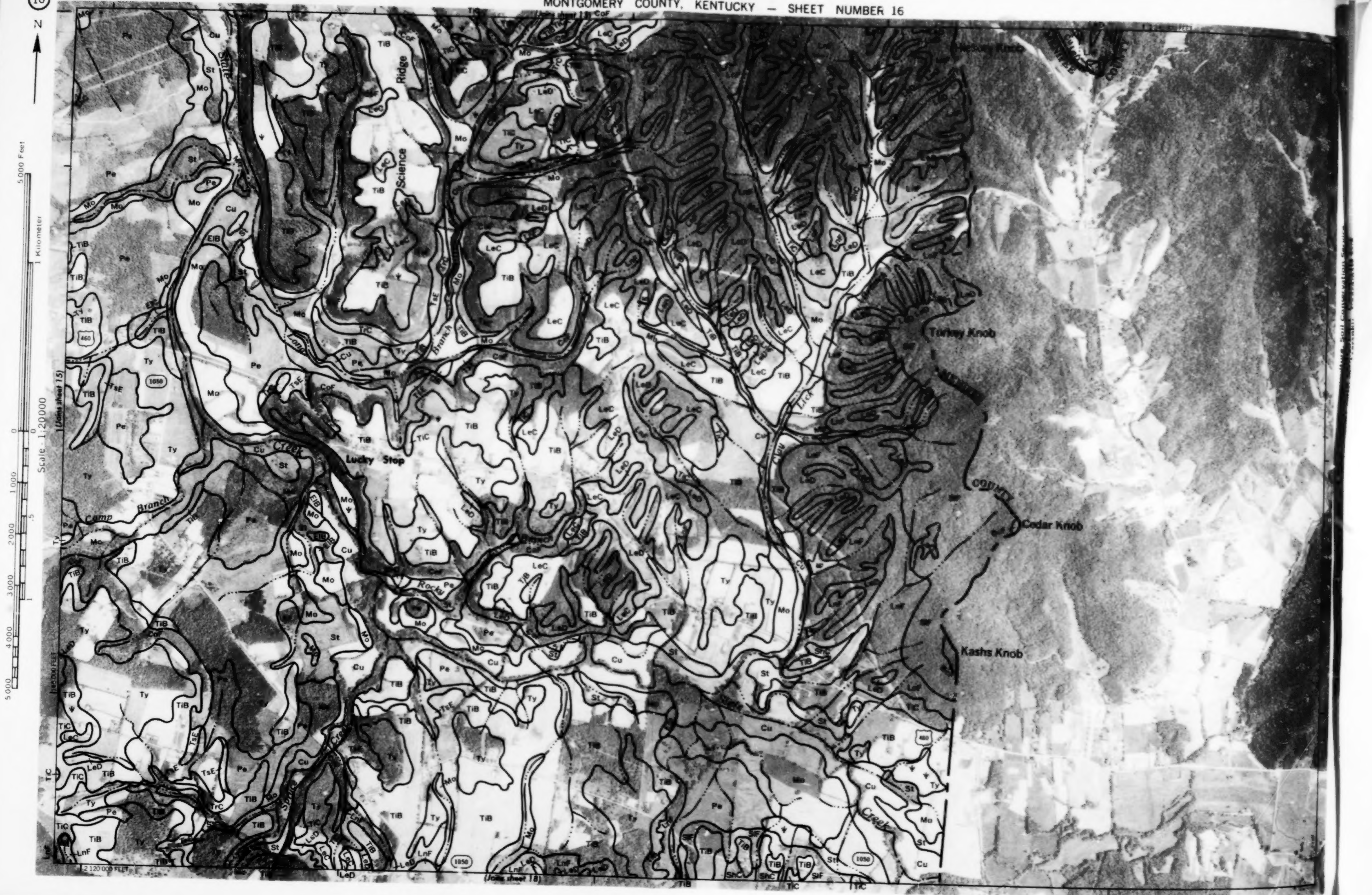
14
N
5000 Feet
1 Kilometer
Scale - 1:20000
0
1000
2000
3000
4000
5000
0
.5
1
(Joins sheet 11)
(Joins sheet 15)
(Joins inset, sheet 10)
1 165 000 FEET
2 075 000 FEET
Soil Conservation Service
CLARK COUNTY
North Fork
Lulbegrud
Levee
Creek
Branch
BARLOW RIDGE
646
11
LoC
LoB
SeC
SeB
FcE
FaC
FaD
FlE
NiB
BaC
BaB
BsE
BrC
CrB
CrC
OtB
WoB
Bo
Hu
Sc
TrC
TiB
TsE
CoF
LeC
LeD
LnF
Mo
Pe
Ty
Ro
ElB

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 15

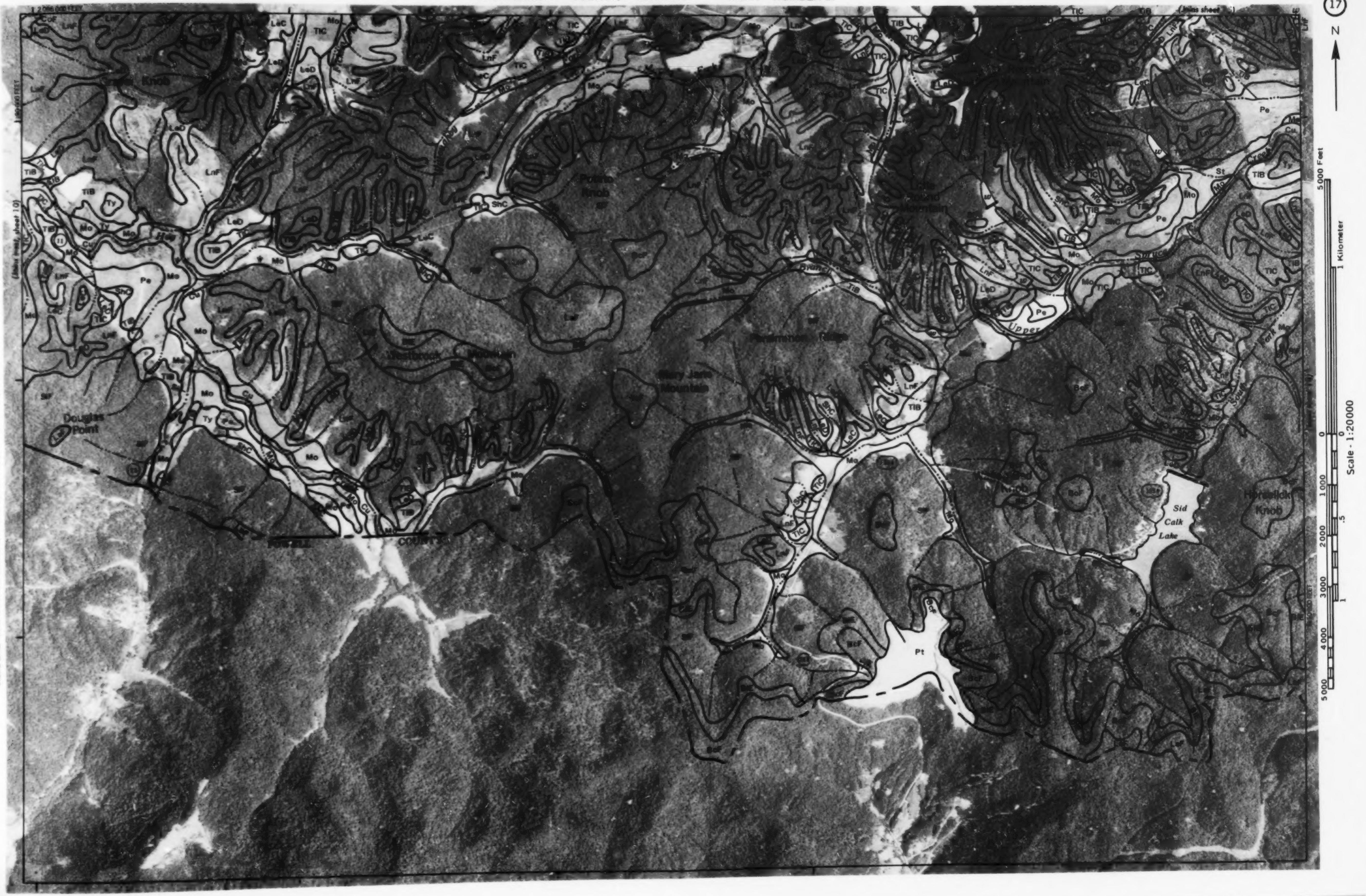

N
(Joins sheet 12)
(Joins sheet 14)
(Joins sheet 16)
(Joins sheet 17)
JEFFERSONVILLE
Bowling Fork
Brush Creek
Martin Fork
Willoughby
Scale 1:20000
5000 Feet
1 Kilometer
0
1000
2000
3000
4000
5000
.5
1

ticks and land division corners, if shown, are approximately positioned.

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 16


N
5 000 Feet
1 Kilometer
Scale 1:20000
0
1000
2000
3000
4000
5000
.5
1
(Joins sheet 15)
(Joins sheet 13)
(Joins sheet 18)
2 120 000 FEET
Science
Ridge
Long Branch
Branch
Lucky Stop
Creek
Camp Branch
Rocky
Spruce Creek
Clay Lick
Turkey Knob
Cedar Knob
Kashs Knob
Hickory Knob
COUNTY
460
1050
Pe
Mo
Cu
St
TiB
TiC
Ty
LeC
LeD
CoF
ElB
TsE
TrC
LnF
ShC
SlF

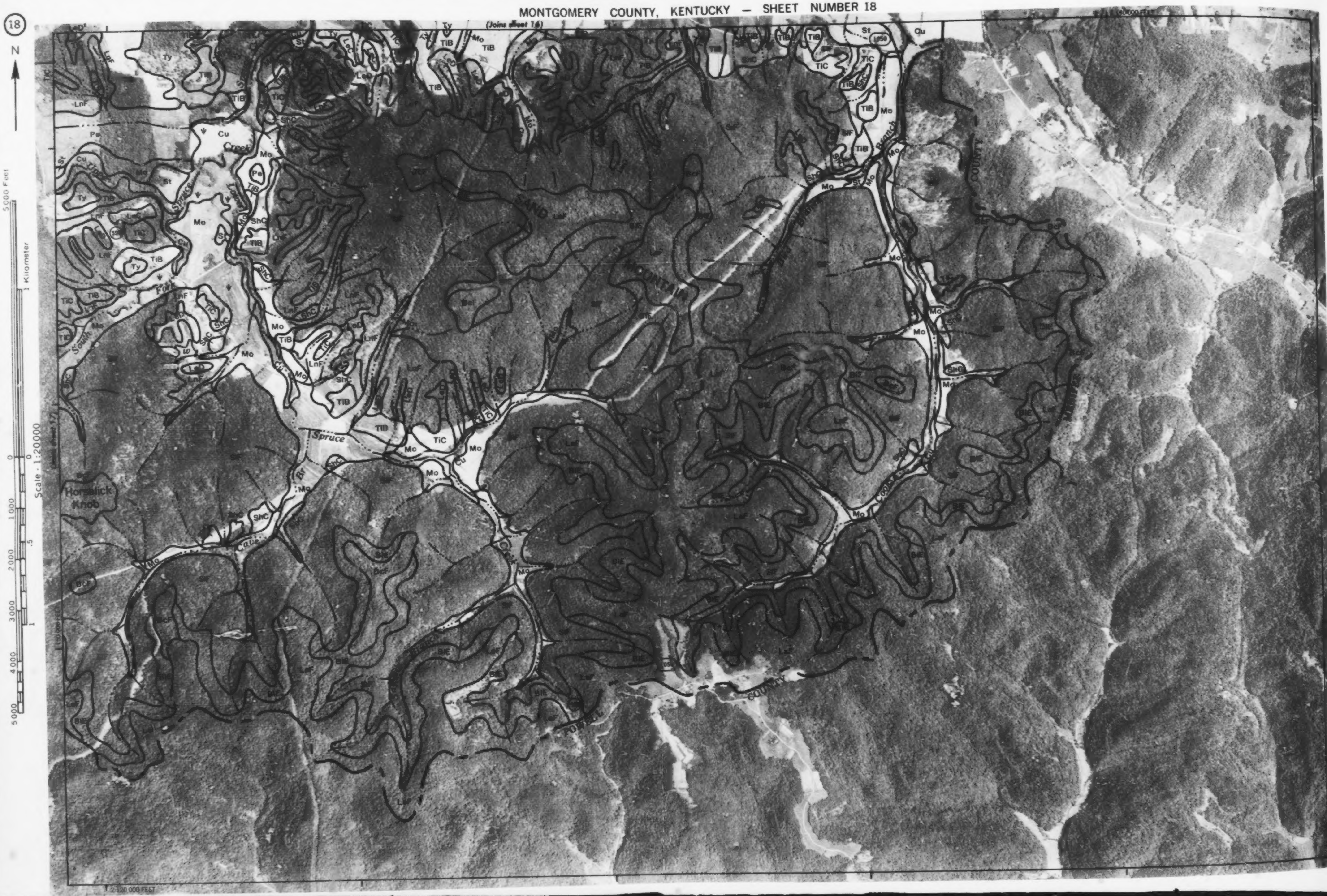
MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 17


17
N
Douglas Point
Mary Jane Mountain
Persimmon Ridge
Sid Calk Lake
Horselick Knob
Upper
Spruce
Creek
POWELL
COUNTY
Pt
Pe
TlB
TlC
LnF
LeD
Mo
Cu
ShC
Ty
BcF
5000 Feet
1 Kilometer
0
1000
2000
3000
4000
5000
0
.5
1
Scale - 1:20000

and cooperating agencies. Base maps are prepared from 1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

(18)

MONTGOMERY COUNTY, KENTUCKY — SHEET NUMBER 18


N
(Joins sheet 16)
Joins sheet 17
5000 Feet
1 Kilometer
Scale 1:20000
0
1000
2000
3000
4000
5000
0
.5
1
2 120 000 FEET
Spruce
Creek
South Fork
Horselick Knob
Cave
SAND MOUNTAIN
Branch
Coons
COUNTY
POWELL
Cu
Mo
St
Ty
TiB
TiC
ShC
LnF
LaF
Pe
BeF
BtE

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

MONTGOMERY COUNTY, KENTUCKY NO. 18